SITE: Former Accurate Weaponry
BREAK: 1.8
OTHER: v.1

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

August 2, 2004

United States Environmental Protection Agency
Region 4
AFC Tower Building
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

Attention: Barbara Schuster

Dear Barbara,

I have enclosed a copy of the site assessment funded by a prospective buyer of the Clearwater Top (Accurate Plating) facility. As I had previously mentioned, that buyer backed out of the purchase, when he received the results of the assessment. Please, let me know if you need anything else.

Craig Feeny
Craig Feeny

Department of Environmental Protection

Jeb Bush
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Colleen M. Castille
Secretary

April 5, 2004

Mr. Gregory J. Van Hook
Van Hook Properties
1155 Tampa Road
Palm Harbor, Florida 34683

Re: Accurate Plating/Clearwater Top, Inc. 1937 Calumet Street, Clearwater, Pinellas County, Florida

Dear Mr. Van Hook:

The Florida Department of Environmental Protection (the Department) requests an update to the status of task completion associated with completing the contamination assessment at the above referenced site. A Contamination Assessment Report Addendum (CARA) was to be submitted on or about March 15, 2004. To date, the Department has not received the CARA. Please provide the CARA within 15 days of letter receipt.

If you have questions or concerns regarding the above, please contact me at (813)-744-6100, ext. 474.

Sincerely yours,

Laura J. Herron, CHMM, REM
Environmental Specialist III
Bureau of Waste Cleanup

cc: Joe McGarrity, SIS Tallahassee
Sandy Nettles, N.S. Nettles & Associates, Inc., 201 Roosevelt Boulevard, Tarpon Springs, Florida 34689

BUREAU OF WASTE CLEANUP
APR - 7 2004
FEDERAL PROGRAMS SECTION

MIAMI
ORLANDO
ST. PETERSBURG
TALLAHASSEE
TAMPA
WEST PALM BEACH

CARLTON FIELDS

ATTORNEYS AT LAW

One Harbour Place
777 S. Harbour Island Boulevard
Tampa, Florida 33602-5730
P.O. Box 3239
Tampa, Florida 33601-3239

813.223.7000
813.229.4133 fax
www.carltonfields.com

D.E.P.
JUN 16 2004
Southwest District Tampa

Laurel Lockett
Shareholder
813.229.4139 (Direct)
llockett@carltonfields.com

June 15, 2004

Laura Herron
Florida Department of Environmental
Division of Waste Management
3804 Coconut Palm Drive
Tampa, FL 33619

Re: Clearwater Top, Inc.
Groundwater and Soil Sampling Results for Clearwater Top, Inc. (Accurate Plating) located at 1937 Calumet Street, Clearwater, Florida

Dear Ms. Herron:

Enclosed are the following documents related to the Clearwater Top property:

1. Groundwater and Soil Sampling Results for Clearwater Top, Inc. (Accurate Plating) dated March 29, 2004, prepared by N. S. Nettles & Associates, Inc.;

2. Clark Environmental, Inc. Generator Profile Documents (for Soil Cuttings and Purge waters; and

3. Non-Hazardous Waste Manifest for soil cuttings.

Should you have any questions, my direct line is (813) 229-4139.

Yours sincerely,

Laurel Lockett

LL:bl
Enclosures
cc: Ms. Ruth Fedorsyn

BUREAU OF WASTE CLEANUP
FEDERAL PROGRAMS SECTION

TPA#1913689.1

Enclosures
cc: Ms. Ruth Fedorsyn

N.S. Nettles & Associates, Inc.

HYDROGEOLOGY ENVIRONMENTAL PERMITTING MARINE ECOLOGY

March 29, 2004

Florida Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619
Attention: Ms. Laura Herron

RE: Groundwater and Soil Sampling Results for Clearwater Top, Inc. (Accurate Plating) located at 1937 Calumet Street, Clearwater, Florida.

Dear Ms. Herron:

On behalf of Gregory Van Hook, prospective buyer of the Clearwater Top, Inc. property located at 1937 Calumet Street in Clearwater Florida, N.S. Nettles & Associates, Inc. conducted site investigation activities including sampling of soils, installation of monitoring wells, and sampling of monitoring wells and surface water. The site investigation activities were based on the scope of work accepted by the Department in their February 9, 2004, letter to Gregory Van Hook.

A number of the tasks that were planned to be conducted were not completed due to pre-existing monitoring wells being removed. In addition, the septic tank that was reported to be on site was no longer in evidence. It is not known if the septic tank was removed or if the access ports to the tank were removed. Currently the area where the septic tank was reported to be located is currently covered with concrete. The following monitoring wells could no longer be located and are assumed to have been properly abandoned: PZ-1, PZ-2, HSAMW-1, HSAMW-2, HSAMW-3, HSAMW-4, HSAMW-6, MW-7, and MW-9. Monitoring wells HSAMW-5 and HSAMW-7 were not accessible for sampling or inspection.

Part of the scope of work was to sample soils and install a monitoring well on property adjacent to the Clearwater Top property at an area that was reported to be a former drum storage area. NSN was not given access to the adjacent property to sample or install monitoring wells. The area reported to be a former drum storage area is currently a concrete paved roadway within a manufacturing facility. The roadway appeared to be carrying considerable traffic within the facility, primarily in the form of fork lifts and carts carrying products and/or equipment and civilian foot traffic.

Four monitoring wells were installed and the soils sampled at the monitoring well locations. In addition one sediment sample and surface water sample was also collected for analysis. The four locations where soil sampling and monitoring wells were installed were all located on the Clearwater Top property. The locations include, west of the west side of the building (NMW-1), south of the southwest corner of the building and near the former location of MW-9 (NMW-2), near the former

PHONE: (727) 786-3900 ADDRESS: 402 Tampa Rd., Palm Harbor, FL 34683 FAX: (727) 786-3577

Website: www.snettles.com Email: nettles@tampabay.rr.com

locations of MW-7 and HSAMW-4 (NMW-4), and south of the southeast corner of the building near the former "blueing area" (NMW-3)

The watertable was known to be relatively shallow, therefore, prior to drilling to install monitoring wells, a hand auger was used to drill and screen and sample soils down to the watertable. The soils were sampled for screening with a photoionization detector (PID) in six inch increments. A PID was used because of the instruments sensitivity in detecting chlorinated volatile organic compounds. The soils were periodically sampled down to the top of the watertable. The PID screening did not register positive readings above background, with background readings varying from location to location by about 1.5 ppm. Because there were no indications of volatile organic compounds as indicated by elevated PID readings, one soil sample was collected from just above the watertable at each monitoring well location. In addition, one sediment sample was collected from the S-2 sample location on the edge of the north-south drainage ditch that runs along the east side of the property.

Soil and sediment samples collected at Clearwater Top property were analyzed by Southern Analytical Laboratories, Inc. in Oldsmar. The soils and sediment samples were analyzed using U.S. EPA Methods 8021 for organic compounds, and U.S. EPA Methods 6010, 7471, 7060 for the eight RCRA metals. Surface water and groundwater samples were analyzed using U.S. EPA Methods 601, 602, 200.7, for purgeable halocarbons, purgeable aromatics, and the eight RCRA metals respectively. Field parameters including specific conductance, pH, dissolved oxygen, and turbidity were also measured at the time of sample collection. The water samples were collected by a sampler from Southern Analytical Laboratories, Inc. Collected samples were stored on ice until they reached the laboratory.

The positive detection of test method compounds are summarized in Table 1 (Positive Hits for Surface Water and Groundwater Samples) and Table 2 (Positive Hits for Soil Samples). The tables include the relevant action level for each compound detected in the samples tested. The sample results that are above the action level are highlighted. Copies of the Laboratory Reports are also attached.

Trace amounts of cis-1,2-Dichloroethene at 0.31 ug/kg occurred at a depth of about three feet in the soils at well NMW-1. Otherwise the test results indicate all other test parameters were non-detected at the indicated Method Detection Limit (MDL). The metal arsenic was detected in the three foot depth soil sample at a concentration of 0.41 mg/kg, and mercury was detected at a concentration of 0.020 mg/kg. Both values are well below the Florida Soil Cleanup Target Levels based on leachability to groundwater.

Soil samples tested from NMW-2 was collected from about 3.5 feet in depth. Organic compounds tested for in the soils were all non-detect at the MDL. However, arsenic was detected at 0.96 mg/kg, barium at 2.10 mg/kg, chromium at 2.60 mg/kg, and mercury at 0.013 mg/kg. All of the metals detected were well below their respective action levels.

PHONE: (727) 786-3900 ADDRESS: 402 Tampa Rd., Palm Harbor, FL 34683 FAX: (727) 786-3577

Website: www.snettles.com Email: nettles@tampabay.rr.com

Soil samples tested from NMW-3 was collected from about 2.0 feet in depth. Organic compounds test for in the soils were all non-detect at the MDL. However, barium was detected at 2.10 mg/kg, chromium at 18.00 mg/kg, and mercury at 0.014 mg/kg. All of the metals detected were well below their respective action levels.

Soil samples tested from NMW-4 was collected from about 2.0 feet in depth. A number of organic compounds were detected in the soil sample including cis-1,2-Dichloroethene at 8.10 ug/kg, Tetrachloroethene at 1.00 ug/kg, Trichloroethene at 1.20 ug/kg, and Total VOA's at 10.00 ug/kg. All the detected organics were at levels well below their respective action levels. All other organic compounds tested for in the soils were non-detected at the MDL. However, some RCRA metals were detected including arsenic detected at 0.46 mg/kg, barium at 9.90 mg/kg, cadmium at 0.15 mg/kg, chromium at 37.00 mg/kg, and mercury at 0.028 mg/kg. All of the metals detected were well below their respective action levels with the exception of chromium which was just below the chromium action level of 38.00 mg/kg.

The sediment samples collected from the drainage ditch running along the east side of the property was collected from just below the waters edge in the ditch. All organic compounds tested for in the sediment sample were non-detected at the MDL. However, some RCRA metals were detected including arsenic detected at 0.30 mg/kg, barium at 7.20 mg/kg, cadmium at 0.27 mg/kg, chromium at 140.00 mg/kg, lead at 33.00 mg/kg, and mercury at 0.036 mg/kg. All of the metals detected were well below their respective action levels with the exception of chromium which was present at 140.00 mg/kg which is above the action level of 38.00 mg/kg.

Groundwater samples from NMW-1 contained cis-1,2-Dichloroethene at 0.31 ug/l, Methylene Chloride at 3.00 ug/l, MTBE at 0.79 ug/l, Toluene at 1.80 ug/l, and Xylenes at 0.69 ug/l. All of these compounds were detected at levels well below their respective action levels. The remainder of the organic compounds tested for were non-detect at the MDL. The groundwater sample also contained 0.034 mg/l of arsenic which is below the arsenic action level. All of the other RCRA metals were non-detect at the MDL.

Groundwater samples from NMW-2 contained 1,1-Dichloroethane at 3.40 ug/l which is well below the action level for 1,1-Dichloroethane. All of the remaining organic compounds tested for were non-detect at the MDL. The groundwater sample also contained 0.026 mg/l of barium which is below the barium action level. All of the other RCRA metals were non-detect at the MDL.

Groundwater samples from NMW-3 contained 1,1-Dichloroethane at 3.60 ug/l, 1,1-Dichloroethene at 1.60 ug/l, and trans-1,2-Dichloroethene at 11.00 ug/l, all of which were well below their respective action levels. The sample also contained cis-1,2-Dichloroethene at 1300.00 ug/l, Tetrachloroethene at 190.00 ug/l, and Trichloroethene at 130.00 ug/l all of which were one to two orders of magnitude above the action level for the compounds. Several aromatics including Chlorobenzene at 16.0 ug/l,

PHONE: (727) 786-3900 ADDRESS: 402 Tampa Rd., Palm Harbor, FL 34683 FAX: (727) 786-3577

Website: www.snettles.com Email: nettles@tampabay.rr.com

1,2-Dichlorobenzene at 28.00 ug/l, 1,3-Dichlorobenzene at 0.68 ug/l, 1,4-Dichlorobenzene at 4.40 ug/l, MTBE at 3.60 ug/l, Toluene at 1.80 ug/l, and Xylenes at 0.69 ug/l. All of the detected aromatic organic compounds were below their respective action levels. All of the remaining organic compounds tested for were non-detect at the MDL. The groundwater sample also contained 0.033 mg/l of barium, and 0.022 mg/l of chromium, both of which are below their respective action level. All of the other RCRA metals were non-detect at the MDL.

Groundwater samples from NMW-4 contained 1,1-Dichloroethane at 2.20 ug/l, 1,1-Dichloroethene at 2.90 ug/l, and trans-1,2-Dichloroethene at 29.00 ug/l, Methylene Chloride at 2,40 ug/l, 1,1,1-Trinchloroethane at 4.40 ug/l, and Trichlorofluoromethane at 0.67 ug/l, all of which were well below their respective action levels. The sample also contained cis-1,2-Dichloroethene at 2500.00 ug/l, Tetrachloroethene at 150.00 ug/l, Trichloroethene at 250.00 ug/l, and Vinyl Chloride at 2.30 ug/l, all of which were one to two orders of magnitude above the action level for the compounds, except Vinyl Chloride which was just above it's action level. Several aromatics including Chlorobenzene at 93.0 ug/l, 1,2-Dichlorobenzene at 86.00 ug/l, 1,3-Dichlorobenzene at 4.80 ug/l, 1,4-Dichlorobenzene at 19.00 ug/l, MTBE at 3.40 ug/l, Toluene at 3.00 ug/l, and Xylenes at 1.5 ug/l. All of the detected aromatic organic compounds were below their respective action levels. All of the remaining organic compounds tested for were non-detect at the MDL. The groundwater sample also contained 0.027 mg/l of barium which is below the action level for barium. All of the other RCRA metals were non-detect at the MDL.

The surface water sample from the ditch along the east side of the property was non-detect for all organics and metals at the MDL except for barium which was present at 0.14 mg/l, well below the barium action level.

The most problematic organic compounds appear to be from a chlorinated solvent source and associated degradational products. Based on the hydrogen sulfide odor in the wells it is likely that anaerobic degradation is active and likely explains the presence of the degradation products.

Overall the RCRA metals present in soils are at low values except for NMW-4 where chromium was present at 140.00 mg/kg and lead was 33 mg/kg. The chromium value was above the action level for chromium, and the lead level at 33.00 mg/kg may not represent much of a problem for an industrial site.

DEP had expressed interest in a discussion on the presence of arsenic on site. The specific source of the arsenic has not been identified. However, the small amount of arsenic present is not likely to be an issue. Based on the pH of the groundwater in the monitoring wells the form of arsenic in both soils and water is likely as an anion in the form $H_2AsO_4^-$, which would be mobile. However, since the groundwater near the base of the watertable is more likely to be anaerobic, the $H_2AsO_4^-$ would tend to become uncharged and remain mobile. Since most surficial watertable aquifers in Florida tend to be high in soluble iron, the soluble or mobile arsenic that is on site would tend to co-precipitate with

PHONE: (727) 786-3900 ADDRESS: 402 Tampa Rd., Palm Harbor, FL 34683 FAX: (727) 786-3577

Website: www.snettles.com Email: nettles@tampabay.rr.com

iron hydroxides as it migrates away from the site. Once precipitated with iron the arsenic would tend to remain as a precipitate so long as its environment remained somewhat oxic. The exact form of the arsenic on site is not specifically known and its form is estimated based on the subsurface environment and groundwater pH. If the arsenic is in a mineral form the explanations offered above are applicable. However, if the arsenic has been biologically mediated it may be in a methylated form and would likely remain fairly mobile and would not be amenable to co-precipitation. The data collected on site indicated that there is little arsenic on site in soils, and even less in groundwater. The lack of arsenic on site suggests that arsenic at Clearwater Top does not represent a problem.

If you have questions about the data collected during this investigation, pleases feel free to contact us.

Sincerely,

Sandy Nettles

Sandy Nettles, P.G.
N.S. Nettles & Associates, Inc

cc: Greg Van Hook

enc

PHONE: (727) 786-3900 ADDRESS: 402 Tampa Rd., Palm Harbor, FL 34683 FAX: (727) 786-3577

Website: www.snettles.com Email: nettles@tampabay.rr.com

Clearwater Top (Accurate Plating)
Positive Hits For Surface Water and Groundwater Samples

Halocarbons	Units	MDL	Standard	NMW-1	NMW-2	NMW-3	NMW-4	Ditch
1,1-Dichloroethane	ug/l	0.3	70	U	3.80	3.60	2.20	U
1,1-Dichloroethene	ug/l	0.5	7	U	U	1.60	2.90	U
cis-1,2-Dichloroethene	ug/l	0.2	70	0.31	U	1300.00	2500.00	U
trans-1,2-Dichloroethene	ug/l	0.5	100	U	U	11.00	29.00	U
Methylene Chloride	ug/l	0.5	5	3.00	U	U	2.40	U
Tetrachloroethene	ug/l	0.2	5	U	U	190.00	150.00	U
1,1,1-Trichloroethane	ug/l	0.3	200	U	U	U	4.40	U
Trichloroethene	ug/l	0.2	5	U	U	130.00	250.00	U
Trichlorofluoromethane	ug/l	0.5	2100	U	U	U	0.67	U
Vinyl Chloride	ug/l	0.5	2	U	U	U	2.30	U
Aromatics								
Chlorobenzene	ug/l	0.3	100	U	U	16.00	93.00	U
1,2-Dichlorobenzene	ug/l	0.5	600	U	U	28.00	86.00	U
1,3-Dichlorobenzene	ug/l	0.5	10	U	U	0.68	4.80	U
1,4-Dichlorobenzene	ug/l	0.5	75	U	U	4.40	19.00	U
MTBE	ug/l	0.5	50	0.79	U	3.60	3.40	U
Toluene	ug/l	0.5	1000	1.80	U	1.80	3.00	U
Xylenes	ug/l	0.5	10000	0.69	U	0.69	1.50	U
RCRA Metals								
Arsenic	mg/l	0.05	0.050	0.034	U	U	U	U
Barium	mg/l	0.01	2.000	U	0.026	0.033	0.027	0.014
Cadmium	mg/l	0.001	0.005	U	U	U	U	U
Chromium	mg/l	0.01	0.100	U	U	0.022	U	U
Lead	mg/l	0.05	0.015	U	U	U	U	U
Mercury	mg/l	0.0001	0.002	U	U	U	U	U
Selinium	mg/l	0.05	0.050	U	U	U	U	U
Silver	mg/l	0.01	0.100	U	U	U	U	U

MDL = Method Detection Limit
Standard = U.S. EPA Primary Drinking Water Standard and/or Florida Groundwater Criteria
U = Undetected at MDL

Table 1

Clearwater Top (Accurate Plating)
Positive Hits For Soil Samples

Halocarbons	Units	MDL	Standard	NMW-1	NMW-2	NMW-3	NMW-4	Sediment
				3.0' depth	3.5' depth	2.0' depth	2.0' depth	Surface
cis-1,2-Dichloroethene	ug/kg	0.2	400	0.31	U	U	8.10	U
Tetrachloroethene	ug/kg	0.2	30	U	U	U	1.00	U
Total VOA	ug/kg	0.3	no standard	U	U	U	10.00	U
Trichloroethene	ug/kg	0.2	30	U	U	U	1.20	U
Aromatics								
RCRA Metals								
Arsenic	mg/kg	0.10	29.00	0.41	0.96	U	0.46	0.30
Barium	mg/kg	0.50	1600.00	U	2.10	2.10	9.90	7.20
Cadmium	mg/kg	0.10	8.00	U	U	U	0.15	0.27
Chromium	mg/kg	0.50	38.00	U	2.60	18.00	37.00	140.00
Lead	mg/kg	2.00	TCLP based	U	U	U	U	33.00
Mercury	mg/kg	0.010	2.100	0.020	0.013	0.014	0.028	0.036

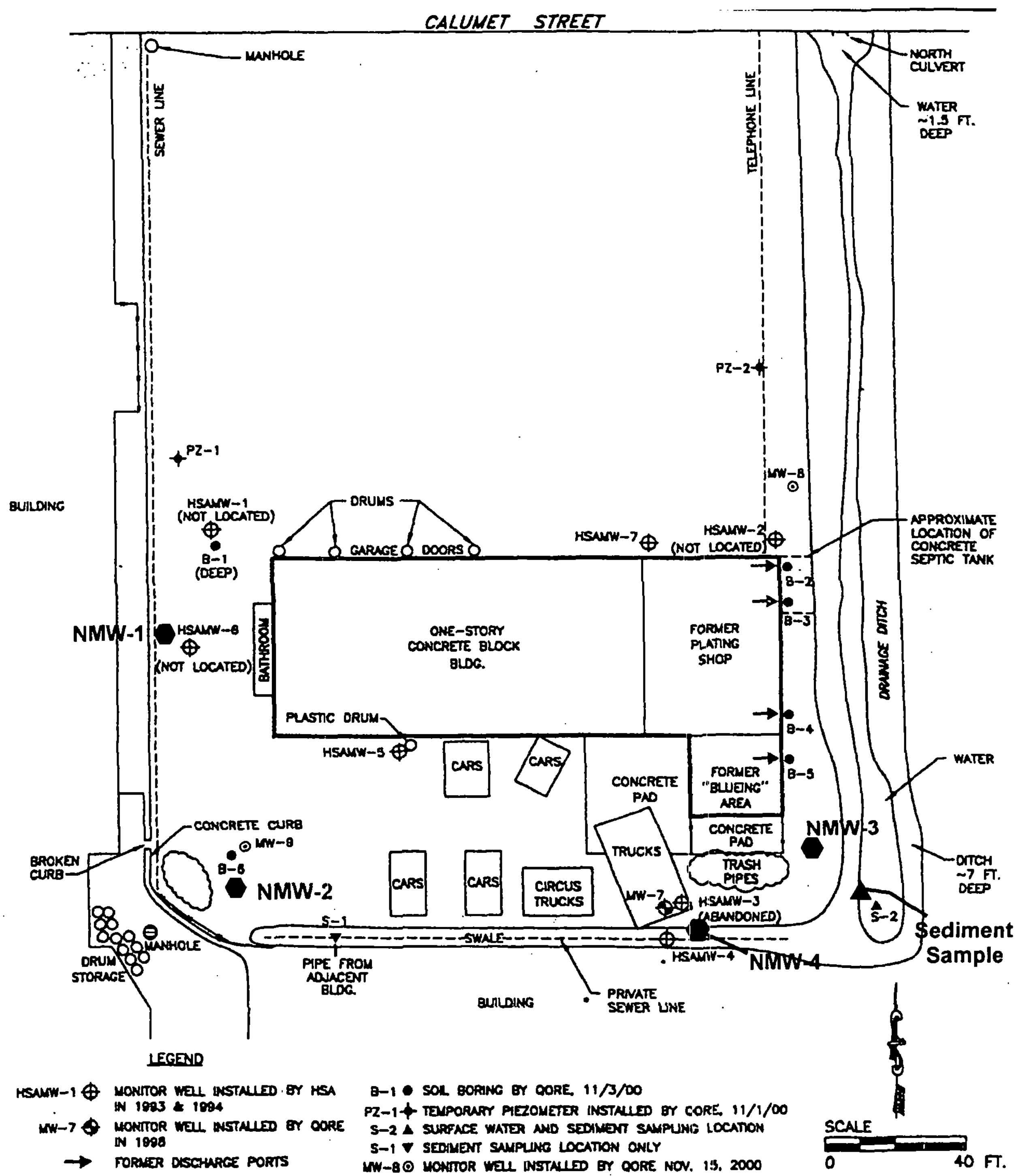
MDL = Method Detection Limit

Standard = Florida Soil Cleanup Target Levels - Leachability Based on Groundwater Criteria

U = Undetected at MDL

Table 2

Clearwater Top (Accurate Plating)
Monitoring Well, Surface Water, and Sediment Sampling Location Map



⬢ Monitoring Well Name and Location

▲ Surface Water and Sediment Sample Location

SOIL BORING LOG
N.S. Nettles Associates, Inc.

Project & Address:	Clearwater Top, 1937 Calumet St., Clearwater Florida	Date:	24-Feb-04
Drilling Company:	Davis Drilling	Boring Number:	NMW-1
Boring Location:	West of building	Reported By:	RJO
Type of Samples:	Hollow Stem Auger Cuttings	Total Depth:	17'
Depth (Feet)	**Lithology Description**	**PID in ppm**	**Total**
	Background PID	0.2 - 0.7	
0.0-1.0	Limestone gravel and tan/gray sand	0.4	
1.0-3.0	Sand, silty, black	0.4	
3.0-4.0	Sand, light tan to brown, moist	0.4	
4.0-16.5	sand, light brown, WT≈ 4'	0.5	
16.5-17.0	Sandy clay, light gray to tan	1.0	
	end of boring		
	hydrogen sulfide odor		
	2" SCH 40 PVC well installed in boring		
	2" x 10' .010 slot w/6" PCV bottom plug		
	2" x 10' riser - 48" cut to flush mount = 16.5' deep well		
	coarse sand pack to 3.5' bgs		
	bentonite chips 1.5' to 2.0'		
	cement finish 1.5' to 0.5'		
	flush mount access w/cement pad		
	finished well casing PID = 0.4 ppm		
	Water level -3.70		

SOIL BORING LOG
N.S. Nettles Associates, Inc.

Project & Address	Clearwater Top, 1937 Calumet St., Clearwater Florida	Date	24-Feb-04
Drilling Company	Davis Drilling	Boring Number	NMW-2
Boring Location	South of Southwest corner of building	Recorded By	RJO
Type of Cuttings	Hollow Stem Auger Cuttings	Total Depth	17.5'
Depth (Feet)	**Lithology Description**	**PID in ppm**	**Total**
	Background PID	0.2 - 0.7	
0.0-1.0	Limestone gravel and tan/gray sand		
1.0-2.0	Sand, light brown	0.1	
2.0-4.0	Sand, light tan to brown, moist	0.1	
4.0-15.0	sand, light brown, WT≈ 4.5'	0.1	
16.5-17.5	Sand to sandy clay, light gray, then stiff gray clay	0.1	
	end of boring		
	2" SCH 40 PVC well installed in boring		
	2" x 10' .010 slot w/6" PCV bottom plug		
	2" x 10' riser - 41" cut to flush mount = 17.0' deep well		
	coarse sand pack to 6' bgs		
	bentonite chips 3.0' to 3.0'		
	cement finish 2.5' to 0.5'		
	flush mount access w/cement pad		
	finished well casing PID = 0.2 ppm		
	Water level -4.32		

SOIL BORING LOG
N.S. Nettles Associates, Inc.

Project & Address:	Clearwater Top, 1937 Calumet St., Clearwater Florida	Date:	24-Feb-04
Drilling Company:	Davis Drilling	Boring Number:	NMW-3
Boring Location:	South of Southeast corner of building	Recorded By:	RJO
Type of Cuttings:	Hollow Stem Auger Cuttings	Total Depth:	17.0'

Depth (Feet)	Lithology Description	PID in ppm	Total
	Background PID	0.0 - 0.5	
0.0-2.0	Limestone gravel, shells concrete fragments, gray sand		
2.0-3.0	Sand, silty, black	0.0	
3.0-5.0	Sand, dark brown to black, moist to wet	0.0	
5.0-6.5	sand, dark brown w/ concrete rubble	0.2	
6.5-8.0	Sand, silty, dark brown	0.3	
8.0-13.0	Sand, light brown to tan	0.2	
13.0-15.0	Sand, silty to clayey, light gray to tan	0.2	
15.0-17.0	Clay, silty, gray	0.2	
	end of boring		
	2" SCH 40 PVC well installed in boring		
	2" x 10' .010 slot w/6" PCV bottom plug		
	2" x 10' riser - 51" cut to flush mount = 16.25' deep well		
	coarse sand pack to 5' bgs		
	bentonite chips 2.5' to 2.5'		
	cement finish 2.0' to 0.5'		
	flush mount access w/cement pad		
	finished well casing PID = 2.7 ppm		
	Water level -1.97		

SOIL BORING LOG
N.S. Nettles Associates, Inc.

Project & Address:	Clearwater Top, 1937 Calumet St., Clearwater Florida	Date:	24-Feb-04
Drilling Company:	Davis Drilling	Boring Number:	NMW-4
Boring Location:	South of Former Plating Shop	Recorded By:	RJO
Type of Samples:	Hollow Stem Auger Cuttings	Total Depth:	17.0'
Depth (Feet)	**Lithology Description**	**PID in ppm**	**Total**
	Background PID	0.0 - 0.5	
0.0-2.0	Sand, silty, brown to dark brown		
2.0-3.0	Sand, silty, black	0.0	
3.0-6.0	Sand, becomes silty, brown, moist to wet	0.0	
6.0-14.0	Sand, silty, light brown to light gray	0.0	
15.0-17.0	Clay, silty, gray	0.0	
	end of boring		
	2" SCH 40 PVC well installed in boring		
	2" x 10' .010 slot w/6" PCV bottom plug		
	2" x 10' riser - 42" cut to flush mount = 17.0' deep well		
	coarse sand pack to 5.5' bgs		
	bentonite chips 2.5' to 3.0'		
	cement finish 2.5' to 0.5'		
	flush mount access w/cement pad		
	finished well casing PID = 1.1 ppm		
	Water level -5.74		

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
405 Tampa Road
Palm Harbor, FL 34683

March 10, 2004
Project No: 40694
Revised

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**MW-1**
Matrix	**Groundwater**
SAL Sample Number	**40694.01**
Date/Time Collected	**02/27/04 08:49**
Date/Time Received	**02/27/04 11:00**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Purgeable Halocarbons							
Bromodichloromethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 07:12		JRW
Bromoform	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
Bromomethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
Carbon tetrachloride	ug/l	0.3 U	EPA 601	0.3	03/04/04 07:12		JRW
Chlorobenzene	ug/l	0.3 U	EPA 601	0.3	03/04/04 07:12		JRW
Chloroethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
2-Chloroethyl vinyl ether	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
Chloroform	ug/l	0.2 U	EPA 601	0.2	03/04/04 07:12		JRW
Chloromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
Dibromochloromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
1,2-Dichlorobenzene	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
1,3-Dichlorobenzene	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
1,4-Dichlorobenzene	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
Dichlorodifluoromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
1,1-Dichloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 07:12		JRW
1,2-Dichloroethane	ug/l	0.2 U	EPA 601	0.2	03/04/04 07:12		JRW
1,1-Dichloroethene	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
cis-1,2-Dichloroethene	ug/l	0.31	EPA 601	0.2	03/04/04 07:12		JRW
trans-1,2-Dichloroethene	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
1,2-Dichloropropane	ug/l	0.3 U	EPA 601	0.3	03/04/04 07:12		JRW
cis-1,3-Dichloropropene	ug/l	0.3 U	EPA 601	0.3	03/04/04 07:12		JRW
trans-1,3-Dichloropropene	ug/l	0.3 U	EPA 601	0.3	03/04/04 07:12		JRW
Methylene chloride	ug/l	3.0	EPA 601	0.5	03/04/04 07:12		JRW
1,1,2,2-Tetrachloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 07:12		JRW
Tetrachloroethene	ug/l	0.2 U	EPA 601	0.2	03/04/04 07:12		JRW
1,1,1-Trichloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 07:12		JRW
1,1,2-Trichloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 07:12		JRW
Trichloroethene	ug/l	0.2 U	EPA 601	0.2	03/04/04 07:12		JRW
Trichlorofluoromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
Vinyl chloride	ug/l	0.5 U	EPA 601	0.5	03/04/04 07:12		JRW
Purgeable Aromatics							
Benzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 07:12		JRW
Chlorobenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 07:12		JRW
1,2-Dichlorobenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 07:12		JRW
1,3-Dichlorobenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 07:12		JRW
1,4-Dichlorobenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 07:12		JRW
Ethylbenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 07:12		JRW
Toluene	ug/l	0.5 U	EPA 602	0.5	03/04/04 07:12		JRW
Xylenes (Total)	ug/l	0.5 U	EPA 602	0.5	03/04/04 07:12		JRW

FDOH Laboratory No. E84129
NELAP Accredited

Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q. A. Manager

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
405 Tampa Road
Palm Harbor, FL 34683

March 10, 2004
Project No: 40694
Revised

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**MW-1**
Matrix	**Groundwater**
SAL Sample Number	**40694.01**
Date/Time Collected	**02/27/04 08:49**
Date/Time Received	**02/27/04 11:00**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Purgeable Aromatics							
Methyl-t-butyl ether	ug/l	0.79	EPA 602	0.5	03/04/04 07:12		JRW
Field Parameters							
Specific Conductance	umhos/cm	519	EPA 120.1	0.1	02/27/04 08:49		LRW
pH	Units	6.0	EPA 150.1	N/A	02/27/04 08:49		LRW
Dissolved Oxygen	mg/l	5.8	EPA 360.1	0.1	02/27/04 08:49		LRW
Turbidity	NTU	15	EPA 180.1	0.05	02/27/04 08:49		LRW
Metals							
Arsenic	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Barium	mg/l	0.034	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS
Cadmium	mg/l	0.001 U	EPA 200.7	0.001	03/01/04 10:30	02/27/04 14:35	LLS
Chromium	mg/l	0.01 U	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS
Lead	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Mercury	mg/l	0.0001 U	EPA 245.1	0.0001	03/01/04 14:30	03/01/04 10:40	AJH
Selenium	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Silver	mg/l	0.01 U	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
405 Tampa Road
Palm Harbor, FL 34683

March 10, 2004
Project No: 40694
Revised

Laboratory Report

Project Name	Clearwater Top
Sample Description	MW-2
Matrix	Groundwater
SAL Sample Number	40694.02
Date/Time Collected	02/27/04 09:18
Date/Time Received	02/27/04 11:00

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Purgeable Halocarbons							
Bromodichloromethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 08:07		JRW
Bromoform	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
Bromomethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
Carbon tetrachloride	ug/l	0.3 U	EPA 601	0.3	03/04/04 08:07		JRW
Chlorobenzene	ug/l	0.3 U	EPA 601	0.3	03/04/04 08:07		JRW
Chloroethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
2-Chloroethyl vinyl ether	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
Chloroform	ug/l	0.2 U	EPA 601	0.2	03/04/04 08:07		JRW
Chloromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
Dibromochloromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
1,2-Dichlorobenzene	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
1,3-Dichlorobenzene	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
1,4-Dichlorobenzene	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
Dichlorodifluoromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
1,1-Dichloroethane	ug/l	3.8	EPA 601	0.3	03/04/04 08:07		JRW
1,2-Dichloroethane	ug/l	0.2 U	EPA 601	0.2	03/04/04 08:07		JRW
1,1-Dichloroethene	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
cis-1,2-Dichloroethene	ug/l	0.2 U	EPA 601	0.2	03/04/04 08:07		JRW
trans-1,2-Dichloroethene	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
1,2-Dichloropropane	ug/l	0.3 U	EPA 601	0.3	03/04/04 08:07		JRW
cis-1,3-Dichloropropene	ug/l	0.3 U	EPA 601	0.3	03/04/04 08:07		JRW
trans-1,3-Dichloropropene	ug/l	0.3 U	EPA 601	0.3	03/04/04 08:07		JRW
Methylene chloride	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
1,1,2,2-Tetrachloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 08:07		JRW
Tetrachloroethene	ug/l	0.2 U	EPA 601	0.2	03/04/04 08:07		JRW
1,1,1-Trichloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 08:07		JRW
1,1,2-Trichloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 08:07		JRW
Trichloroethene	ug/l	0.2 U	EPA 601	0.2	03/04/04 08:07		JRW
Trichlorofluoromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
Vinyl chloride	ug/l	0.5 U	EPA 601	0.5	03/04/04 08:07		JRW
Purgeable Aromatics							
Benzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 08:07		JRW
Chlorobenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 08:07		JRW
1,2-Dichlorobenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 08:07		JRW
1,3-Dichlorobenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 08:07		JRW
1,4-Dichlorobenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 08:07		JRW
Ethylbenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 08:07		JRW
Toluene	ug/l	0.5 U	EPA 602	0.5	03/04/04 08:07		JRW
Xylenes (Total)	ug/l	0.5 U	EPA 602	0.5	03/04/04 08:07		JRW

FDOH Laboratory No. E84129
NELAP Accredited

Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q. A. Manager

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677   813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
405 Tampa Road
Palm Harbor, FL 34683

March 10, 2004
Project No: 40694
Revised

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**MW-2**
Matrix	**Groundwater**
SAL Sample Number	**40694.02**
Date/Time Collected	**02/27/04 09:18**
Date/Time Received	**02/27/04 11:00**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Purgeable Aromatics							
Methyl-t-butyl ether	ug/l	0.5 U	EPA 602	0.5	03/04/04 08:07		JRW
Field Parameters							
Specific Conductance	umhos/cm	503	EPA 120.1	0.1	02/27/04 09:18		LRW
pH	Units	6.3	EPA 150.1	N/A	02/27/04 09:18		LRW
Dissolved Oxygen	mg/l	6.0	EPA 360.1	0.1	02/27/04 09:18		LRW
Turbidity	NTU	15	EPA 180.1	0.05	02/27/04 09:18		LRW
Metals							
Arsenic	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Barium	mg/l	0.026	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS
Cadmium	mg/l	0.001 U	EPA 200.7	0.001	03/01/04 10:30	02/27/04 14:35	LLS
Chromium	mg/l	0.01 U	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS
Lead	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Mercury	mg/l	0.0001 U	EPA 245.1	0.0001	03/01/04 14:30	03/01/04 10:40	AJH
Selenium	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Silver	mg/l	0.01 U	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
405 Tampa Road
Palm Harbor, FL 34683

March 10, 2004
Project No: 40694
Revised

Laboratory Report

Project Name	Clearwater Top
Sample Description	MW-3
Matrix	Groundwater
SAL Sample Number	40694.03
Date/Time Collected	02/27/04 09:47
Date/Time Received	02/27/04 11:00

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Purgeable Halocarbons							
Bromodichloromethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:00		JRW
Bromoform	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:00		JRW
Bromomethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:00		JRW
Carbon tetrachloride	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:00		JRW
Chlorobenzene	ug/l	16	EPA 601	0.3	03/04/04 09:00		JRW
Chloroethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:00		JRW
2-Chloroethyl vinyl ether	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:00		JRW
Chloroform	ug/l	0.2 U	EPA 601	0.2	03/04/04 09:00		JRW
Chloromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:00		JRW
Dibromochloromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:00		JRW
1,2-Dichlorobenzene	ug/l	28	EPA 601	0.5	03/04/04 12:32		JRW
1,3-Dichlorobenzene	ug/l	0.68	EPA 601	0.5	03/04/04 09:00		JRW
1,4-Dichlorobenzene	ug/l	4.4	EPA 601	0.5	03/04/04 09:00		JRW
Dichlorodifluoromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:00		JRW
1,1-Dichloroethane	ug/l	3.6	EPA 601	0.3	03/04/04 09:00		JRW
1,2-Dichloroethane	ug/l	0.2 U	EPA 601	0.2	03/04/04 09:00		JRW
1,1-Dichloroethene	ug/l	1.6	EPA 601	0.5	03/04/04 09:00		JRW
cis-1,2-Dichloroethene	ug/l	1,300	EPA 601	0.2	03/04/04 13:28		JRW
trans-1,2-Dichloroethene	ug/l	11	EPA 601	0.5	03/04/04 09:00		JRW
1,2-Dichloropropane	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:00		JRW
cis-1,3-Dichloropropene	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:00		JRW
trans-1,3-Dichloropropene	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:00		JRW
Methylene chloride	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:00		JRW
1,1,2,2-Tetrachloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:00		JRW
Tetrachloroethene	ug/l	190	EPA 601	0.2	03/04/04 12:32		JRW
1,1,1-Trichloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:00		JRW
1,1,2-Trichloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:00		JRW
Trichloroethene	ug/l	130	EPA 601	0.2	03/04/04 12:32		JRW
Trichlorofluoromethane	ug/l	0.57	EPA 601	0.5	03/04/04 09:00		JRW
Vinyl chloride	ug/l	0.65	EPA 601	0.5	03/04/04 09:00		JRW
Purgeable Aromatics							
Benzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 09:00		JRW
Chlorobenzene	ug/l	16	EPA 602	0.5	03/04/04 09:00		JRW
1,2-Dichlorobenzene	ug/l	28	EPA 602	0.5	03/04/04 12:32		JRW
1,3-Dichlorobenzene	ug/l	0.68	EPA 602	0.5	03/04/04 09:00		JRW
1,4-Dichlorobenzene	ug/l	4.4	EPA 602	0.5	03/04/04 09:00		JRW
Ethylbenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 09:00		JRW
Toluene	ug/l	1.8	EPA 602	0.5	03/04/04 09:00		JRW
Xylenes (Total)	ug/l	0.69	EPA 602	0.5	03/04/04 09:00		JRW

FDOH Laboratory No. E84129
NELAP Accredited

Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q. A. Manager

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
405 Tampa Road
Palm Harbor, FL 34683

March 10, 2004
Project No: 40694
Revised

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**MW-3**
Matrix	**Groundwater**
SAL Sample Number	**40694.03**
Date/Time Collected	**02/27/04 09:47**
Date/Time Received	**02/27/04 11:00**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Purgeable Aromatics							
Methyl-t-butyl ether	ug/l	3.6	EPA 602	0.5	03/04/04 09:00		JRW
Field Parameters							
Specific Conductance	umhos/cm	398.9	EPA 120.1	0.1	02/27/04 09:47		LRW
pH	Units	5.6	EPA 150.1	N/A	02/27/04 09:47		LRW
Dissolved Oxygen	mg/l	5.3	EPA 360.1	0.1	02/27/04 09:47		LRW
Turbidity	NTU	60	EPA 180.1	0.05	02/27/04 09:47		LRW
Metals							
Arsenic	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Barium	mg/l	0.033	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS
Cadmium	mg/l	0.001 U	EPA 200.7	0.001	03/01/04 10:30	02/27/04 14:35	LLS
Chromium	mg/l	0.022	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS
Lead	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Mercury	mg/l	0.0001 U	EPA 245.1	0.0001	03/01/04 14:30	03/01/04 10:40	AJH
Selenium	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Silver	mg/l	0.01 U	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
405 Tampa Road
Palm Harbor, FL 34683

March 10, 2004
Project No: 40694
Revised

Laboratory Report

Project Name	Clearwater Top
Sample Description	MW-4
Matrix	Groundwater
SAL Sample Number	40694.04
Date/Time Collected	02/27/04 10:20
Date/Time Received	02/27/04 11:00

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Purgeable Halocarbons							
Bromodichloromethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:56		JRW
Bromoform	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:56		JRW
Bromomethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:56		JRW
Carbon tetrachloride	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:56		JRW
Chlorobenzene	ug/l	93	EPA 601	0.3	03/04/04 14:23		JRW
Chloroethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:56		JRW
2-Chloroethyl vinyl ether	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:56		JRW
Chloroform	ug/l	0.2 U	EPA 601	0.2	03/04/04 09:56		JRW
Chloromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:56		JRW
Dibromochloromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:56		JRW
1,2-Dichlorobenzene	ug/l	86	EPA 601	0.5	03/04/04 14:23		JRW
1,3-Dichlorobenzene	ug/l	4.8	EPA 601	0.5	03/04/04 09:56		JRW
1,4-Dichlorobenzene	ug/l	19	EPA 601	0.5	03/04/04 09:56		JRW
Dichlorodifluoromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 09:56		JRW
1,1-Dichloroethane	ug/l	2.2	EPA 601	0.3	03/04/04 09:56		JRW
1,2-Dichloroethane	ug/l	0.2 U	EPA 601	0.2	03/04/04 09:56		JRW
1,1-Dichloroethene	ug/l	2.9	EPA 601	0.5	03/04/04 09:56		JRW
cis-1,2-Dichloroethene	ug/l	2,500	EPA 601	0.2	03/04/04 16:12		JRW
trans-1,2-Dichloroethene	ug/l	29	EPA 601	0.5	03/04/04 14:23		JRW
1,2-Dichloropropane	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:56		JRW
cis-1,3-Dichloropropene	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:56		JRW
trans-1,3-Dichloropropene	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:56		JRW
Methylene chloride	ug/l	2.4	EPA 601	0.5	03/04/04 09:56		JRW
1,1,2,2-Tetrachloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:56		JRW
Tetrachloroethene	ug/l	150	EPA 601	0.2	03/04/04 14:23		JRW
1,1,1-Trichloroethane	ug/l	4.4	EPA 601	0.3	03/04/04 09:56		JRW
1,1,2-Trichloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 09:56		JRW
Trichloroethene	ug/l	250	EPA 601	0.2	03/04/04 15:17		JRW
Trichlorofluoromethane	ug/l	0.67	EPA 601	0.5	03/04/04 09:56		JRW
Vinyl chloride	ug/l	2.3	EPA 601	0.5	03/04/04 09:56		JRW
Purgeable Aromatics							
Benzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 09:56		JRW
Chlorobenzene	ug/l	93	EPA 602	0.5	03/04/04 14:23		JRW
1,2-Dichlorobenzene	ug/l	86	EPA 602	0.5	03/04/04 14:23		JRW
1,3-Dichlorobenzene	ug/l	4.8	EPA 602	0.5	03/04/04 09:56		JRW
1,4-Dichlorobenzene	ug/l	19	EPA 602	0.5	03/04/04 09:56		JRW
Ethylbenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 09:56		JRW
Toluene	ug/l	3.0	EPA 602	0.5	03/04/04 09:56		JRW
Xylenes (Total)	ug/l	1.5	EPA 602	0.5	03/04/04 09:56		JRW

FDOH Laboratory No. E84129
NELAP Accredited

Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q. A. Manager

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
405 Tampa Road
Palm Harbor, FL 34683

March 10, 2004
Project No: 40694
Revised

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**MW-4**
Matrix	**Groundwater**
SAL Sample Number	**40694.04**
Date/Time Collected	**02/27/04 10:20**
Date/Time Received	**02/27/04 11:00**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Purgeable Aromatics							
Methyl-t-butyl ether	ug/l	3.4	EPA 602	0.5	03/04/04 09:56		JRW
Field Parameters							
Specific Conductance	umhos/cm	376.1	EPA 120.1	0.1	02/27/04 10:20		LRW
pH	Units	6.2	EPA 150.1	N/A	02/27/04 10:20		LRW
Dissolved Oxygen	mg/l	6.4	EPA 360.1	0.1	02/27/04 10:20		LRW
Turbidity	NTU	34	EPA 180.1	0.05	02/27/04 10:20		LRW
Metals							
Arsenic	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Barium	mg/l	0.027	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS
Cadmium	mg/l	0.001 U	EPA 200.7	0.001	03/01/04 10:30	02/27/04 14:35	LLS
Chromium	mg/l	0.01 U	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS
Lead	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Mercury	mg/l	0.0001 U	EPA 245.1	0.0001	03/01/04 14:30	03/01/04 10:40	AJH
Selenium	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Silver	mg/l	0.01 U	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS

FDOH Laboratory No. E84129
NELAP Accredited

Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q. A. Manager

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
405 Tampa Road
Palm Harbor, FL 34683

March 10, 2004
Project No: 40694
Revised

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**Ditch**
Matrix	**Surface Water**
SAL Sample Number	**40694.05**
Date/Time Collected	**02/27/04 10:40**
Date/Time Received	**02/27/04 11:00**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Purgeable Halocarbons							
Bromodichloromethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 19:48		JRW
Bromoform	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
Bromomethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
Carbon tetrachloride	ug/l	0.3 U	EPA 601	0.3	03/04/04 19:48		JRW
Chlorobenzene	ug/l	0.3 U	EPA 601	0.3	03/04/04 19:48		JRW
Chloroethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
2-Chloroethyl vinyl ether	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
Chloroform	ug/l	0.2 U	EPA 601	0.2	03/04/04 19:48		JRW
Chloromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
Dibromochloromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
1,2-Dichlorobenzene	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
1,3-Dichlorobenzene	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
1,4-Dichlorobenzene	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
Dichlorodifluoromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
1,1-Dichloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 19:48		JRW
1,2-Dichloroethane	ug/l	0.2 U	EPA 601	0.2	03/04/04 19:48		JRW
1,1-Dichloroethene	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
cis-1,2-Dichloroethene	ug/l	0.2 U	EPA 601	0.2	03/04/04 19:48		JRW
trans-1,2-Dichloroethene	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
1,2-Dichloropropane	ug/l	0.3 U	EPA 601	0.3	03/04/04 19:48		JRW
cis-1,3-Dichloropropene	ug/l	0.3 U	EPA 601	0.3	03/04/04 19:48		JRW
trans-1,3-Dichloropropene	ug/l	0.3 U	EPA 601	0.3	03/04/04 19:48		JRW
Methylene chloride	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
1,1,2,2-Tetrachloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 19:48		JRW
Tetrachloroethene	ug/l	0.2 U	EPA 601	0.2	03/04/04 19:48		JRW
1,1,1-Trichloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 19:48		JRW
1,1,2-Trichloroethane	ug/l	0.3 U	EPA 601	0.3	03/04/04 19:48		JRW
Trichloroethene	ug/l	0.2 U	EPA 601	0.2	03/04/04 19:48		JRW
Trichlorofluoromethane	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
Vinyl chloride	ug/l	0.5 U	EPA 601	0.5	03/04/04 19:48		JRW
Purgeable Aromatics							
Benzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 19:48		JRW
Chlorobenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 19:48		JRW
1,2-Dichlorobenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 19:48		JRW
1,3-Dichlorobenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 19:48		JRW
1,4-Dichlorobenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 19:48		JRW
Ethylbenzene	ug/l	0.5 U	EPA 602	0.5	03/04/04 19:48		JRW
Toluene	ug/l	0.5 U	EPA 602	0.5	03/04/04 19:48		JRW
Xylenes (Total)	ug/l	0.5 U	EPA 602	0.5	03/04/04 19:48		JRW

FDOH Laboratory No. E84129
NELAP Accredited

Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q. A. Manager

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
405 Tampa Road
Palm Harbor, FL 34683

March 10, 2004
Project No: 40694
Revised

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**Ditch**
Matrix	**Surface Water**
SAL Sample Number	**40694.05**
Date/Time Collected	**02/27/04 10:40**
Date/Time Received	**02/27/04 11:00**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Purgeable Aromatics							
Methyl-t-butyl ether	ug/l	0.5 U	EPA 602	0.5	03/04/04 19:48		JRW
Field Parameters							
Specific Conductance	umhos/cm	308	EPA 120.1	0.1	02/27/04 10:40		LRW
pH	Units	6.6	EPA 150.1	N/A	02/27/04 10:40		LRW
Dissolved Oxygen	mg/l	18	EPA 360.1	0.1	02/27/04 10:40		LRW
Turbidity	NTU	10	EPA 180.1	0.05	02/27/04 10:40		LRW
Metals							
Arsenic	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Barium	mg/l	0.014	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS
Cadmium	mg/l	0.001 U	EPA 200.7	0.001	03/01/04 10:30	02/27/04 14:35	LLS
Chromium	mg/l	0.01 U	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS
Lead	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Mercury	mg/l	0.0001 U	EPA 245.1	0.0001	03/01/04 14:30	03/01/04 10:40	AJH
Selenium	mg/l	0.05 U	EPA 200.7	0.05	03/01/04 10:30	02/27/04 14:35	LLS
Silver	mg/l	0.01 U	EPA 200.7	0.01	03/01/04 10:30	02/27/04 14:35	LLS

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
405 Tampa Road
Palm Harbor, FL 34683

March 10, 2004
Project No: 40694
Revised

Laboratory Report

Footnotes

*	Test results presented in this report meet all the requirements of the NELAC standards.
**	A statement of estimated uncertainty of test results is available upon request.
U	Analyte was not detected; indicated concentration is method detection limit.

FDOH Laboratory No. E84129
NELAP Accredited

Approved By: Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q. A. Manager

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project No. 40694

Client Name: NS Nettles	Contact / Phone: Randy Overton (727) 945-7696
Project Name / Location: Clearwater Top	Turn Around Time Requested (*Surcharges may apply) 24 Hour* ☐ 48 Hour* ☐ 5 Bus. Days* ☐ 10 Bus. Days ☑
Samplers: (Signature) Larry R. Ward	PARAMETER / CONTAINER DESCRIPTION

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	40 mL V, HCl ~~8021 so LL~~ 8260 / 601/602	250 mL P, HNO3 RCRA 8 Metals							No. of Containers (Total per each location)
01	MW-1	2/27/04	0849	GW ~~SW~~		X	2	1							5
02	MW-2	↓	0918	GW ~~SW~~		X	2	1							5
03	MW-3	↓	0947	GW ~~SW~~		X	2	1							5
04	MW-4	↓	10:20	GW ~~SW~~		X	2	1							5
05	Ditch	↓	10:40	SW		X	2	1							5
06	Trip Blank	2/26/04	1430	R		X	1								

Containers Prepared/ Relinquished:	Date/Time:	Received:	Date/Time:
Lindsey Krause	2/26/04 1400	Larry R. Ward	2/27/04 0630
Relinquished: Larry R. Ward	2/27/04 1100	Received: [signature]	2/27/04 1102
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact?	Y N N/A (N/A)
Samples intact upon arrival?	Y N N/A (Y)
Received on ice? Temp____	Y N N/A (Y)
Proper preservatives indicated?	Y N N/A (Y)
Rec'd within holding time?	Y N N/A (Y)
Volatiles rec'd w/out headspace	Y N N/A (Y)
Proper containers used?	Y N N/A (Y)

Instructions / Remarks

Confirmatory

Client indicated there may be contamination but does not expect high levels.

SAL Report Page ___ of ___

Chain of Custody.xls
Rev.Date 11/19/01

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project# 40694
Date: 2/25/04

Groundwater Sampling Log

Client Name: NS Nettles & Assocaties	Site Location:	Client Contact Phone:
Well No.: MW-1	Sample ID: 40694.01	GPS Coordinates: Long. Lat.

Purging Data

Well Diameter (in.): ~~AE~~ 2	Total Well Depth (ft.): 16.4	Static Depth To Water (ft.): 2.06	Well Capacity (gal/ft):
Reference Elevation (NGVD):	(Reference Elevation-Static Depth) Groundwater Elevation:		
1 Well Volume (gal) = (Total Well Depth - Depth to Water) x Well Capacity = (16.4 - ~~H~~ 2.06: 14.34) x 0.16 2.29		3 Well Vol. 6.88	5 Well Vol. =
Purge Method: Grundfos Pump	Purge Initiated At: 0829	Purge Ended At:	Total Vol. Purged:

Time	Vol. Purged (gal)	Purge Rate (gpm)	Depth to Water (ft)	pH	Temperature (C)	Conductivity (umhos)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0834	2.5			6.1	19.3	597	6.38	15.4
0839	5			6.1	20.0	558	6.27	15.2
0844	7.5			6.0	20.1	519	5.75	15.2

Well Capacity (gallons/foot): 0.75" = 0.04; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

Sampling Data

Sampled By/ Affiliation:	Sampler Signature: [signature]	
Purging/ Sampling Device	Sampling Initiated At: 0846	Sampling Ended At: 0849
Field Decontamination: Y N	Field Filtered: Y N	Duplicate: Y N
Preservation Checked in the field? Initials:	Date:	
Field Cleaned (List sequence and all solutions used):		

Observed Sample, Site, and Weather Conditions

Observed Sample Color	
Observed Sample Odor	
Weather Conditions	
Comments (use back of form if necessary)	

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project# 40694
Date: 2/27/04

Groundwater Sampling Log

Client Name: NS Nettles & Assocaties	Site Location:	Client Contact Phone:
Well No.: MW-2	Sample ID: 40694.02	GPS Coordinates: Long. Lat.

Purging Data

Well Diameter (in.):	Total Well Depth (ft.): 17.58	Static Depth To Water (ft.): 2.75	Well Capacity (gal/ft):
Reference Elevation (NGVD):	(Reference Elevation-Static Depth) Groundwater Elevation:		

1 Well Volume = (Total Well Depth - Depth to Water) x Well Capacity =
(gal) = (17.58 - 2.75 = 14.33) x 0.16 = 2.37

3 Well Vol. 7.11
5 Well Vol. =

Purge Method: Grundfos Pump | Purge Initiated At: 0900 | Purge Ended At: | Total Vol. Purged:

Time	Vol. Purged (gal)	Purge Rate (gpm)	Depth to Water (ft)	pH	Temperature (C)	Conductivity (umhos)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0905	2.5			6.6	20.8	583	6.66	16.7
0910	5			6.4	21.5	530	6.04	16.6
0915	7.5			6.3	21.4	503	6.02	10.4

Well Capacity (gallons/foot): 0.75" = 0.04; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

Sampling Data

Sampled By/ Affiliation:	Sampler Signature: Larry L. Ward	
Purging/ Sampling Device	Sampling Initiated At: 0914	Sampling Ended At: 0918
Field Decontamination: (Y) N	Field Filtered: Y (N)	Duplicate: Y (N)
Preservation Checked in the field? Initials: LLW	Date: 2/27/04	

Field Cleaned (List sequence and all solutions used):
DI x 2

Observed Sample, Site, and Weather Conditions

Observed Sample Color	Clear
Observed Sample Odor	None
Weather Conditions	Cloudy

Comments (use back of form if necessary)

groundwater sampling log sheet.xls
Rev.Date 7/25/02

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project# 40694
Date: 2/27/04

Groundwater Sampling Log

Client Name: NS Nettles & Assocaties	Site Location:	Client Contact Phone:
Well No.:	Sample ID: 40694.03	GPS Coordinates: Long. Lat.

Purging Data

Well Diameter (in.): MW-3	Total Well Depth (ft.): 15.75	Static Depth To Water (ft.): 3.50	Well Capacity (gal/ft):
Reference Elevation (NGVD):		(Reference Elevation-Static Depth) Groundwater Elevation:	

1 Well Volume (gal)	= (Total Well Depth - Depth to Water) x Well Capacity =	3 Well Vol.	5 Well Vol.
	= (15.75-3.50=12.25) x 0.16 1.36		=

Purge Method: Grundfos Pump	Purge Initiated At: 0933	Purge Ended At: 0942	Total Vol. Purged: 4.5

Time	Vol. Purged (gal)	Purge Rate (gpm)	Depth to Water (ft)	pH	Temperature (C)	Conductivity (umhos)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
0936	1.5			5.6	19.8	393.5	5.48	76.2
0939	3			5.6	20.2	400.6	5.32	59.1
0942	4.5			5.6	20.2	398.9	5.31	58.9

Well Capacity (gallons/foot): 0.75" = 0.04; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

Sampling Data

Sampled By/ Affiliation:	Sampler Signature: Larry K. Ward	
Purging/ Sampling Device	Sampling Initiated At: 0945	Sampling Ended At: 0947
Field Decontamination: Y (circled) N	Field Filtered: Y N (circled)	Duplicate: Y N (circled)
Preservation Checked in the field? Initials: LW	Date: 2/27	

Field Cleaned (List sequence and all solutions used):

DI x 2

Observed Sample, Site, and Weather Conditions

Observed Sample Color	Brownish Turbid
Observed Sample Odor	None
Weather Conditions	Cloudy

Comments (use back of form if necessary)

groundwater sampling log sheet.xls
Rev.Date 7/25/02

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project# 40694

Date: 2/27/04

Groundwater Sampling Log

Client Name: NS Nettles & Assocaties	Site Location:	Client Contact Phone:
Well No.:	Sample ID: 40694.04	GPS Coordinates: Long. Lat.

Purging Data

Well Diameter (in.): MW-4	Total Well Depth (ft.): 16.25	Static Depth To Water (ft.): 2.25	Well Capacity (gal/ft):
Reference Elevation (NGVD):	(Reference Elevation-Static Depth) Groundwater Elevation:		
1 Well Volume (gal) = (Total Well Depth - Depth to Water) x Well Capacity = (16.25 - 2.25=14) x 0.16 2.24		3 Well Vol. 6.72	5 Well Vol. =
Purge Method: Grundfos Pump	Purge Initiated At: 0955	Purge Ended At: 10:10	Total Vol. Purged: 7.5

Time	Vol. Purged (gal)	Purge Rate (gpm)	Depth to Water (ft)	pH	Temperature (C)	Conductivity (umhos)	Dissolved Oxygen (mg/L)	Turbidity (NTU)
10:00	2.5			6.2	19.1	373.1	6.49	34.3
10:05	5			6.2	19.2	374.5	6.43	34.1
10:10	7.5			6.2	19.2	374.1	6.40	33.5

Well Capacity (gallons/foot): 0.75" = 0.04; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

Sampling Data

Sampled By/ Affiliation:	Sampler Signature: [signature]	
Purging/ Sampling Device	Sampling Initiated At: 10:15	Sampling Ended At: 10:20
Field Decontamination: Y (circled) N	Field Filtered: Y N (circled)	Duplicate: Y N (circled)
Preservation Checked in the field? Initials: 2841	Date: 2/27/04	
Field Cleaned (List sequence and all solutions used): DI x 2		

Observed Sample, Site, and Weather Conditions

Observed Sample Color	Turbid
Observed Sample Odor	None
Weather Conditions	cloudy
Comments (use back of form if necessary)	

groundwater sampling log sheet.xls
Rev.Date 7/25/02

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project# 40694
Date: 2/23/04

Surface Water Sampling Log

Client Name: NS Nettles	Site Location: Clearwater Top	Client Contact Phone:
Surface Water Description: Ditch / Sample ID: 4069409		GPS Coordinates: Long. Lat.

Sampling Data

Sampled By/ Affiliation: Larry Ward, Southern Analytical Laboratories	Sampler Signature: Larry R. Ward
Sampling Device:	Sampling Initiated At: 10:40
Sampling location relative to shore	1'
Method of approach (wading, boat, overhang, etc.)	
Depth of sample (ft.)	4"
Est. Flow Rate (if applicable)	
pH	6.6
Specific Conductance (umhos)	308
Temperature (°C)	18.1
Dissolved Oxygen (mg/L)	6.67
Turbidity (NTU)	10.4
Sample Appearance	Clear
Sample Odor	None
Field Decontamination: Y N	Field Filtered: Y N / Duplicate: Y N
Preservation Checked in the field? Initials:	Date:
Field Cleaned (List sequence and all solutions used):	

Site and Weather Conditions

Comments (use back of form if necessary)

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
201 Roosevelt Blvd.
New Port Richey, FL 34689

March 3, 2004
Project No: 40621

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**NMW-1-3'**
Matrix	**Solid**
SAL Sample Number	**40621.01**
Date/Time Collected	**02/24/04 14:16**
Date/Time Received	**02/25/04 09:40**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Volatile Organic Compounds (Low Level)							
1,1,1,2-Tetrachloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
1,1,1-Trichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
1,1,2,2-Tetrachloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
1,1,2-Trichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
1,1-Dichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
1,1-Dichloroethene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
1,1-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
1,2,3-Trichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
1,2,3-Trichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
1,2,4 Trichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
1,2,4-Trimethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
1,2-Dibromoethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
1,2-Dichloroethane	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 20:30		JRW
1,2-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
1,3,5-Trimethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
1,3-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
2,2-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
2-Chlorotoluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
4-Chlorotoluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Benzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Bromobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Bromochloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Bromodichloromethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
Bromoform	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Bromomethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Carbon tetrachloride	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
Chloroethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Chloroform	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 20:30		JRW
Chloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
cis-1,2-Dichloroethene	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 20:30		JRW
cis-1,3-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
Dibromochloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Dibromomethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Dichlorodifluoromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Ethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Hexachlorobutadiene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Isopropylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
m-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Methylene Chloride	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Methyl-tert-butyl ether	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
201 Roosevelt Blvd.
New Port Richey, FL 34689

March 3, 2004
***Project No:* 40621**

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**NMW-1-3'**
Matrix	**Solid**
SAL Sample Number	**40621.01**
Date/Time Collected	**02/24/04 14:16**
Date/Time Received	**02/25/04 09:40**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Volatile Organic Compounds (Low Level)							
Monochlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Naphthalene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
n-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
n-Propylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
o-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
p-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
p-Isopropyltoluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
sec-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Styrene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
tert-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Tetrachloroethene	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 20:30		JRW
Toluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Total VOA	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
trans-1,2-Dichloroethene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
trans-1,3-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 20:30		JRW
Trichloroethene	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 20:30		JRW
Trichlorofluoromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Vinyl chloride	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Xylenes (Total)	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
2-Chloroethyl Vinyl Ether	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Chlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 20:30		JRW
Metals							
Arsenic	mg/kg	0.41	EPA 7060	0.1	03/02/04 09:30	02/26/04 10:50	LLS
Barium	mg/kg	0.5 U	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS
Cadmium	mg/kg	0.1 U	EPA 6010	0.1	02/26/04 14:50	02/26/04 10:45	LLS
Chromium	mg/kg	0.5 U	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS
Lead	mg/kg	2.0 U	EPA 6010	2.0	02/26/04 14:50	02/26/04 10:45	LLS
Mercury	mg/kg	0.020	EPA 7471	0.01	02/27/04 13:45	02/27/04 12:00	AJH
Selenium	mg/kg	2.5 U	EPA 6010	2.5	02/26/04 14:50	02/26/04 10:45	LLS
Silver	mg/kg	0.5 U	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
201 Roosevelt Blvd.
New Port Richey, FL 34689

March 3, 2004
Project No: 40621

Laboratory Report

Project Name	Clearwater Top
Sample Description	NMW-2-3.5'
Matrix	Solid
SAL Sample Number	40621.02
Date/Time Collected	02/24/04 16:30
Date/Time Received	02/25/04 09:40

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Volatile Organic Compounds (Low Level)							
1,1,1,2-Tetrachloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
1,1,1-Trichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
1,1,2,2-Tetrachloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
1,1,2-Trichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
1,1-Dichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
1,1-Dichloroethene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
1,1-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
1,2,3-Trichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
1,2,3-Trichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
1,2,4 Trichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
1,2,4-Trimethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
1,2-Dibromoethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
1,2-Dichloroethane	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 21:24		JRW
1,2-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
1,3,5-Trimethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
1,3-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
2,2-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
2-Chlorotoluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
4-Chlorotoluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Benzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Bromobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Bromochloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Bromodichloromethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
Bromoform	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Bromomethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Carbon tetrachloride	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
Chloroethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Chloroform	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 21:24		JRW
Chloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
cis-1,2-Dichloroethene	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 21:24		JRW
cis-1,3-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
Dibromochloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Dibromomethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Dichlorodifluoromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Ethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Hexachlorobutadiene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Isopropylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
m-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Methylene Chloride	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Methyl-tert-butyl ether	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW

FDOH Laboratory No. E84129
NELAP Accredited

Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q. A. Manager

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
201 Roosevelt Blvd.
New Port Richey, FL 34689

March 3, 2004
Project No: 40621

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**NMW-2-3.5'**
Matrix	**Solid**
SAL Sample Number	**40621.02**
Date/Time Collected	**02/24/04 16:30**
Date/Time Received	**02/25/04 09:40**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Volatile Organic Compounds (Low Level)							
Monochlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Naphthalene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
n-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
n-Propylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
o-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
p-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
p-Isopropyltoluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
sec-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Styrene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
tert-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Tetrachloroethene	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 21:24		JRW
Toluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Total VOA	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
trans-1,2-Dichloroethene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
trans-1,3-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 21:24		JRW
Trichloroethene	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 21:24		JRW
Trichlorofluoromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Vinyl chloride	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Xylenes (Total)	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
2-Chloroethyl Vinyl Ether	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Chlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 21:24		JRW
Metals							
Arsenic	mg/kg	0.98	EPA 7060	0.1	03/02/04 09:30	02/26/04 10:50	LLS
Barium	mg/kg	2.1	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS
Cadmium	mg/kg	0.1 U	EPA 6010	0.1	02/26/04 14:50	02/26/04 10:45	LLS
Chromium	mg/kg	2.6	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS
Lead	mg/kg	2.0 U	EPA 6010	2.0	02/26/04 14:50	02/26/04 10:45	LLS
Mercury	mg/kg	0.013	EPA 7471	0.01	02/27/04 13:45	02/27/04 12:00	AJH
Selenium	mg/kg	2.5 U	EPA 6010	2.5	02/26/04 14:50	02/26/04 10:45	LLS
Silver	mg/kg	0.5 U	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
201 Roosevelt Blvd.
New Port Richey, FL 34689

March 3, 2004
Project No: 40621

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**NMW-3-2'**
Matrix	**Solid**
SAL Sample Number	**40621.03**
Date/Time Collected	**02/24/04 15:13**
Date/Time Received	**02/25/04 09:40**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Volatile Organic Compounds (Low Level)							
1,1,1,2-Tetrachloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
1,1,1-Trichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
1,1,2,2-Tetrachloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
1,1,2-Trichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
1,1-Dichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
1,1-Dichloroethene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
1,1-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
1,2,3-Trichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
1,2,3-Trichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
1,2,4 Trichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
1,2,4-Trimethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
1,2-Dibromoethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
1,2-Dichloroethane	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 22:19		JRW
1,2-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
1,3,5-Trimethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
1,3-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
2,2-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
2-Chlorotoluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
4-Chlorotoluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Benzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Bromobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Bromochloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Bromodichloromethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
Bromoform	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Bromomethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Carbon tetrachloride	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
Chloroethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Chloroform	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 22:19		JRW
Chloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
cis-1,2-Dichloroethene	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 22:19		JRW
cis-1,3-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
Dibromochloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Dibromomethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Dichlorodifluoromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Ethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Hexachlorobutadiene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Isopropylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
m-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Methylene Chloride	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Methyl-tert-butyl ether	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
201 Roosevelt Blvd.
New Port Richey, FL 34689

March 3, 2004
Project No: 40621

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**NMW-3-2'**
Matrix	**Solid**
SAL Sample Number	**40621.03**
Date/Time Collected	**02/24/04 15:13**
Date/Time Received	**02/25/04 09:40**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Volatile Organic Compounds (Low Level)							
Monochlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Naphthalene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
n-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
n-Propylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
o-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
p-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
p-Isopropyltoluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
sec-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Styrene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
tert-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Tetrachloroethene	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 22:19		JRW
Toluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Total VOA	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
trans-1,2-Dichloroethene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
trans-1,3-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 22:19		JRW
Trichloroethene	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 22:19		JRW
Trichlorofluoromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Vinyl chloride	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Xylenes (Total)	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
2-Chloroethyl Vinyl Ether	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Chlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 22:19		JRW
Metals							
Arsenic	mg/kg	0.1 U	EPA 7060	0.1	03/02/04 09:30	02/26/04 10:50	LLS
Barium	mg/kg	2.1	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS
Cadmium	mg/kg	0.1 U	EPA 6010	0.1	02/26/04 14:50	02/26/04 10:45	LLS
Chromium	mg/kg	18	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS
Lead	mg/kg	2.0 U	EPA 6010	2.0	02/26/04 14:50	02/26/04 10:45	LLS
Mercury	mg/kg	0.014	EPA 7471	0.01	02/27/04 13:45	02/27/04 12:00	AJH
Selenium	mg/kg	2.5 U	EPA 6010	2.5	02/26/04 14:50	02/26/04 10:45	LLS
Silver	mg/kg	0.5 U	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
201 Roosevelt Blvd.
New Port Richey, FL 34689

March 3, 2004
Project No: 40621

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**NMW-4-2'**
Matrix	**Solid**
SAL Sample Number	**40621.04**
Date/Time Collected	**02/24/04 14:50**
Date/Time Received	**02/25/04 09:40**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Volatile Organic Compounds (Low Level)							
1,1,1,2-Tetrachloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
1,1,1-Trichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
1,1,2,2-Tetrachloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
1,1,2-Trichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
1,1-Dichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
1,1-Dichloroethene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
1,1-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
1,2,3-Trichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
1,2,3-Trichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
1,2,4 Trichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
1,2,4-Trimethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
1,2-Dibromoethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
1,2-Dichloroethane	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 23:14		JRW
1,2-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
1,3,5-Trimethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
1,3-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
2,2-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
2-Chlorotoluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
4-Chlorotoluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Benzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Bromobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Bromochloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Bromodichloromethane	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
Bromoform	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Bromomethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Carbon tetrachloride	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
Chloroethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Chloroform	ug/kg	0.2 U	EPA 8021	0.2	02/25/04 23:14		JRW
Chloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
cis-1,2-Dichloroethene	ug/kg	8.1	EPA 8021	0.2	02/25/04 23:14		JRW
cis-1,3-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
Dibromochloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Dibromomethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Dichlorodifluoromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Ethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Hexachlorobutadiene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Isopropylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
m-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Methylene Chloride	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Methyl-tert-butyl ether	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
201 Roosevelt Blvd.
New Port Richey, FL 34689

March 3, 2004
Project No: 40621

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**NMW-4-2'**
Matrix	**Solid**
SAL Sample Number	**40621.04**
Date/Time Collected	**02/24/04 14:50**
Date/Time Received	**02/25/04 09:40**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Volatile Organic Compounds (Low Level)							
Monochlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Naphthalene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
n-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
n-Propylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
o-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
p-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
p-Isopropyltoluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
sec-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Styrene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
tert-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Tetrachloroethene	ug/kg	1.0	EPA 8021	0.2	02/25/04 23:14		JRW
Toluene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Total VOA	ug/kg	10	EPA 8021	0.5	02/25/04 23:14		JRW
trans-1,2-Dichloroethene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
trans-1,3-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/25/04 23:14		JRW
Trichloroethene	ug/kg	1.2	EPA 8021	0.2	02/25/04 23:14		JRW
Trichlorofluoromethane	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Vinyl chloride	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Xylenes (Total)	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
2-Chloroethyl Vinyl Ether	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Chlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/25/04 23:14		JRW
Metals							
Arsenic	mg/kg	0.46	EPA 7060	0.1	03/02/04 09:30	02/26/04 10:50	LLS
Barium	mg/kg	9.9	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS
Cadmium	mg/kg	0.15	EPA 6010	0.1	02/26/04 14:50	02/26/04 10:45	LLS
Chromium	mg/kg	34	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS
Lead	mg/kg	37	EPA 6010	2.0	02/26/04 14:50	02/26/04 10:45	LLS
Mercury	mg/kg	0.028	EPA 7471	0.01	02/27/04 13:45	02/27/04 12:00	AJH
Selenium	mg/kg	2.5 U	EPA 6010	2.5	02/26/04 14:50	02/26/04 10:45	LLS
Silver	mg/kg	0.5 U	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
201 Roosevelt Blvd.
New Port Richey, FL 34689

March 3, 2004
Project No: 40621

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**Sediment**
Matrix	**Solid**
SAL Sample Number	**40621.05**
Date/Time Collected	**02/24/04 15:40**
Date/Time Received	**02/25/04 09:40**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Volatile Organic Compounds (Low Level)							
1,1,1,2-Tetrachloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
1,1,1-Trichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
1,1,2,2-Tetrachloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
1,1,2-Trichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
1,1-Dichloroethane	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
1,1-Dichloroethene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
1,1-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
1,2,3-Trichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
1,2,3-Trichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
1,2,4 Trichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
1,2,4-Trimethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
1,2-Dibromoethane	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
1,2-Dichloroethane	ug/kg	0.2 U	EPA 8021	0.2	02/26/04 00:08		JRW
1,2-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
1,3,5-Trimethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
1,3-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
2,2-Dichloropropane	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
2-Chlorotoluene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
4-Chlorotoluene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Benzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Bromobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Bromochloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Bromodichloromethane	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
Bromoform	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Bromomethane	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Carbon tetrachloride	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
Chloroethane	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Chloroform	ug/kg	0.2 U	EPA 8021	0.2	02/26/04 00:08		JRW
Chloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
cis-1,2-Dichloroethene	ug/kg	0.2 U	EPA 8021	0.2	02/26/04 00:08		JRW
cis-1,3-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
Dibromochloromethane	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Dibromomethane	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Dichlorodifluoromethane	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Ethylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Hexachlorobutadiene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Isopropylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
m-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Methylene Chloride	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Methyl-tert-butyl ether	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW

FDOH Laboratory No. E84129
NELAP Accredited

Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q. A. Manager

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
201 Roosevelt Blvd.
New Port Richey, FL 34689

March 3, 2004
Project No: 40621

Laboratory Report

Project Name	**Clearwater Top**
Sample Description	**Sediment**
Matrix	**Solid**
SAL Sample Number	**40621.05**
Date/Time Collected	**02/24/04 15:40**
Date/Time Received	**02/25/04 09:40**

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Volatile Organic Compounds (Low Level)							
Monochlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Naphthalene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
n-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
n-Propylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
o-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
p-Dichlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
p-Isopropyltoluene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
sec-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Styrene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
tert-Butylbenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Tetrachloroethene	ug/kg	0.2 U	EPA 8021	0.2	02/26/04 00:08		JRW
Toluene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Total VOA	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
trans-1,2-Dichloroethene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
trans-1,3-Dichloropropene	ug/kg	0.3 U	EPA 8021	0.3	02/26/04 00:08		JRW
Trichloroethene	ug/kg	0.2 U	EPA 8021	0.2	02/26/04 00:08		JRW
Trichlorofluoromethane	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Vinyl chloride	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Xylenes (Total)	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
2-Chloroethyl Vinyl Ether	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Chlorobenzene	ug/kg	0.5 U	EPA 8021	0.5	02/26/04 00:08		JRW
Metals							
Arsenic	mg/kg	0.30	EPA 7060	0.1	03/02/04 09:30	02/26/04 10:50	LLS
Barium	mg/kg	7.2	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS
Cadmium	mg/kg	0.27	EPA 6010	0.1	02/26/04 14:50	02/26/04 10:45	LLS
Chromium	mg/kg	140	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS
Lead	mg/kg	33	EPA 6010	2.0	02/26/04 14:50	02/26/04 10:45	LLS
Mercury	mg/kg	0.036	EPA 7471	0.01	02/27/04 13:45	02/27/04 12:00	AJH
Selenium	mg/kg	2.5 U	EPA 6010	2.5	02/26/04 14:50	02/26/04 10:45	LLS
Silver	mg/kg	0.5 U	EPA 6010	0.5	02/26/04 14:50	02/26/04 10:45	LLS

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

N. S. Nettles & Associates Inc.
201 Roosevelt Blvd.
New Port Richey, FL 34689

March 3, 2004
Project No: 40621

Laboratory Report

Footnotes

*	Test results presented in this report meet all the requirements of the NELAC standards.
**	A statement of estimated uncertainty of test results is available upon request.
U	Analyte was not detected; indicated concentration is method detection limit.

Results reported on a dry weight basis.

FDOH Laboratory No. E84129
NELAP Accredited

Approved By: Francis I. Daniels, Laboratory Director
Leslie C. Boardman, Q. A. Manager

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

SAL Project No. 40621

Client Name	Contact / Phone:
NS Nettles	Randy Overton (727) 945-7696
Project Name / Location: Clearwater Top	Turn Around Time Requested (*Surcharges may apply) 24 Hour* [ ] 48 Hour* [ ] 5 Bus. Days* [ ] 10 Bus. Days [x]
Samplers: (Signature) Randall J Overton	PARAMETER / CONTAINER DESCRIPTION

Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water

SAL Use Only Sample No.	Sample Description	Date	Time	Matrix	Composite	Grab	40 mL V, Water & Stir bar 8021-so-LL	40 mL V, Cool 8021-so-~~HL~~	~~8 oz jar~~ 4 oz jar Cool RCRA 8 Metals						No. of Containers (Total per each location)
01	NMW-1-3'	2/24/04	14:16	SO		X	2	2	1						5 ~~3~~
02	NMW-2-3.5'	2/24/04	16:30	SO		X	2	2	1						5 ~~3~~
03	NMW-3-2'	2/24/04	15:15	SO		X	2	2	1						5 ~~3~~
04	NMW-4-2'	2/24/04	14:50	SO		X	2	2	1						5 ~~3~~
05	Sediment	2/24/04	15:40	SO		X	2	2	1						5 ~~3~~
	Trip Blank			R		X		~~1~~							
	missing from cooler														

Containers Prepared/ Relinquished:	Date/Time:	Received:	Date/Time:
Lindsay Grecco	2/23/04 0930	[signature]	1540 2/23/04
Relinquished: [signature]	2-24-04 0940	Received: F. deAndino	2-24-04 0940
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:
Relinquished:	Date/Time:	Received:	Date/Time:

Seal intact? Y N (N/A)
Samples intact upon arrival? (Y) N N/A
Received on ice? Temp 3.7°C (Y) N N/A
Proper preservatives indicated? (Y) N N/A
Rec'd within holding time? (Y) N N/A
Volatiles rec'd w/out headspace (Y) N N/A
Proper containers used? Y N (N/A)

Instructions / Remarks

Confirmatory

Client indicated there may be contamination but does not expect high levels.

no odor detected by sampler by PID

SAL Report Page ___ of ___

Chain of Custody.xls
Rev.Date 11/19/01

CLARK ENVIRONMENTAL, INC.
GENERATOR PROFILE DOCUMENT

Clark ENVIRONMENTAL

Phone: (772) 464-4884
Fax: (772) 464-6566

New X Amendment ___

Tracking #: 1002 1815 01

Waste Common Name Soil Cuttings

I GENERATOR INFORMATION

Generator Name x Greg Van Hook
US EPA ID # FLD051482719
Site Address 1937 Calumet Street
State ID # ___ SIC # ___
City Clearwater State FL Zip 33765-
Billing Name Van Hook Properties, Inc.
Mailing Address 1155 Tampa Road
Billing Address 1155 Tampa Road
City Palm Harbor State FL Zip 34683-
City Palm Harbor State FL Zip 34683-
Technical Contact Greg Van Hook
Billing Contact Greg Van Hook
Phone (727) 785-1610 Fax # (727) 785-3305
Phone (727) 785-1610 Fax (727) 785-3305

II WASTE GENERATION INFORMATION

Process Description Soil cuttings from well installation at former gun finishing (plating) facility.

Is this material RCRA Hazardous? N If yes, list EPA waste code #'s ___

Does this waste contain Benzene subject to the control requirements of 40 CFR part 61 subpart FF (NESHAP) N Y/N

III PHYSICAL CHARACTERISTICS AT 70°F

Chemical Composition	%	Physical State		Flash Point		pH	
Soil	100 %	Solids	100 %		< 73°F		< 2
	%	Free Liquids	0 %		73 - 140°F		2.1 - 5
	%	Sludges	0 %		141 - 200°F		5.1 - 9
	%	Powders	0 %		> 200°F		9.1 - 12.4
	%	Debris	0 %	Y	N/A		>12.5

Chemical Composition	%	Boiling Point		Layers		Viscosity	
	%		< 95°F	Y	Single Layer		Low
	%		>95°F		Bi-Layered		Medium
	%	Y	N/A		Multi-Layered	Y	High

Density ___ Specific Gravity ___

Odor None

Color Brown

Does Waste Contain Any:				Reactivity			
Infectious or Biological Waste?	N	Fuming Acids?	N	N/A	Y	Water Reactive	N
Unreacted Polymers or Resins?	N	Oxidizers?	N	Sulfides	N	Shock Sensitive	N
Debris as defined in 40CFR 268.2?	N	Dioxins?	N	Cyanides	N	Thermally Sensitive	N
Radioactivity?	N	Asbestos?	N	Pyrophoric	N	DOT Explosive	N

IV RECYCLING/FUEL BLENDING

Heat Value 0 BTU/lb Water Content 0 % Ash Content 0 % VOC's ≥500ppm ___

Total Bromine 0 % Total Iodine 0 % Total Chlorine 0 % Total Sulfur 0 % Total Fluoride 0 %

V LAND DISPOSAL RESTRICTIONS

Treatment Subcategory: Wastewater ___ Nonwastewater ___ Debris ___ Soil ___

Does this waste require identification of Underlying Hazardous Constituents? (D001, D002, D004 - D043) N

If Yes, list all underlying hazardous constituent(s) ___

VI TOXICITY CHARACTERISTIC CONSTITUENTS

Tracking #: 181501

Constituent	TCLP (ppm)		Total (ppm)	Constituent	TCLP (ppm)		Total (ppm)
D004 Arsenic	0	≥ 5	0.96	D024 M-Cresol	0	≥ 200	0
D005 Barium	0	≥100	9.9	D025 P-Cresol	0	≥ 200	0
D006 Cadmium	0	≥ 1	.15	D026 Cresol	0	≥ 200	0
D007 Chromium	0	≥ 5	34	D027 1,4 Dichlorobenzene	0	≥ 7.5	0
D008 Lead	0	≥ 5	37	D028 1,2 Dichloroethane	0	≥ 0.5	0
D009 Mercury	0	≥ 0.2	0.028	D029 1,1 Dichloroethylene	0	≥ 0.7	0
D010 Selenium	0	≥ 1	0	D030 2,4 Dinitrotoluene	0	≥ 0.13	0
D011 Silver	0	≥ 5	0	D031 Heptachlor	0	≥0.008	0
Copper	0	N/A	0	D032 Hexachlorobenzene	0	≥0.13	0
Zinc	0	N/A	0	D033 Hexachlorobutadiene	0	≥ .5	0
Nickel	0	≥134	0	D034 Hexachloroethane	0	≥ 3	0
Thallium	0	N/A	0	D035 Methyl Ethyl Ketone	0	≥200	0
D012 Endrin	0	≥ 0.02	0	D036 Nitrobenzene	0	≥ 2	0
D013 Lindane	0	≥ 0.4	0	D037 Pentachlorophenol	0	≥100	0
D014 Methoxychlor	0	≥ 10	0	D038 Pyridine	0	≥ 5	0
D015 Toxaphene	0	≥ 0.5	0	D039 Tetrachloroethylene	0	≥ 0.7	0.001
D016 2,4, D	0	≥ 10	0	D040 Trichloroethylene	0	≥ 0.5	0
D017 2,4,5 TP (Silvex)	0	≥ 1	0	D041 2,4,5 Trichlorophenol	0	≥ 400	0
D018 Benzene	0	≥ 0.5	0	D042 2,4,6 Trichlorophenol	0	≥ 2	0
D019 Carbon Tetrachloride	0	≥ 0.5	0	D043 Vinyl Chloride	0	≥ 0.2	0
D020 Chlordane	0	≥ 0.03	0	PCB's		≥ 50	0
D021 Chlorobenzene	0	≥ 100	0	Phenolics		N/A	0
D022 Chloroform	0	≥ 6	0	TOC %		N/A	0
D023 O-Cresol	0	≥ 200	0	TOX %		N/A	0

VII SHIPPING INFORMATION/VOLUME

Volume

___ 5 Gal Pail ___ Cu Yd Bx
___ 10 Gal Drum ___ Pallet
___ 20 Gal Drum ___ Tons
___ 30 Gal Drum ___ Cu.Yds
4 55 Gal Drum ___ Gallons
___ 85 Gal Drum ___ 110 Gal Drum

Frequency

Y One Time
___ Weekly
___ Monthly
___ Quarterly
___ Yearly

DOT Information

Shipping Name Soil cuttings. Non-regulated material

UN/NA # ___ Hazard Class ___ Packing Group ___

RQ ___ lbs. ERG # ___ Hazardous Material? ___

Is this material a marine pollutant? N

VIII ATTACHMENTS

MSDS ___ Sample ___ Lab Analysis Y Other Attachments ___

IX GENERATORS CERTIFICATION

I hereby certify that all information submitted in this document and all attachments is a complete and accurate description of all the known and suspected hazards of this waste material. I also hereby authorize CEI personnel to add any supplemental information provided I am contacted to give verbal permission. I also authorize CEI personnel to transpose the information contained on this document onto non-CEI waste profile documents and to sign said documents as our agent.

Signature x Gregory J. VanHook Printed Name x Gregory J. VanHook

Company Name x Van Hook Properties, Inc Title x Pres Date x 4/26/04

CLARK ENVIRONMENTAL, INC.
GENERATOR PROFILE DOCUMENT

Phone: (772) 464-4884
Fax: (772) 464-5566

New X Amendment ___

Tracking #: 1002 1815 02

Waste Common Name: Purge waters

I GENERATOR INFORMATION

Generator Name: Greg Van Hook — US EPA ID #: FLD051482719
Site Address: 1937 Calumet Street — State ID #: ___ SIC #: ___
City: Clearwater State: FL Zip: 33765- — Billing Name: Van Hook Properties, Inc.
Mailing Address: 1155 Tampa Road — Billing Address: 1155 Tampa Road
City: Palm Harbor State: FL Zip: 34683- — City: Palm Harbor State: FL Zip: 34683-
Technical Contact: Greg Van Hook — Billing Contact: Greg Van Hook
Phone: (727) 785-1610 Fax #: (727) 785-3305 — Phone: (727) 785-1610 Fax: (727) 785-3305

II WASTE GENERATION INFORMATION

Process Description: Water from the purging of wells at a former gun finishing (plating) facility. The source of the solvents is unknown.

Is this material RCRA Hazardous? N If yes, list EPA waste code #'s ___

Does this waste contain Benzene subject to the control requirements of 40 CFR part 61 subpart FF (NESHAP) N Y/N

III PHYSICAL CHARACTERISTICS AT 70°F

Chemical Composition

Component	%
Water	100 %
Solvents	<.001 %
	%
	%
	%
	%
	%
	%

Density ___ Specific Gravity ___

Odor: None

Physical State

Solids	0 %
Free Liquids	100 %
Sludges	0 %
Powders	0 %
Debris	0 %

Flash Point

	< 73°F
	73 - 140°F
	141 - 200°F
Y	> 200°F
	N/A

pH

	< 2
	2.1 - 5
Y	5.1 - 9
	9.1 - 12.4
	>12.5

Boiling Point

	< 95°F
Y	>95°F
	N/A

Layers

Y	Single Layer
	Bi-Layered
	Multi-Layered

Viscosity

Y	Low
	Medium
	High

Color: Colorless

Does Waste Contain Any:

Infectious or Biological Waste?	N	Fuming Acids?	N
Unreacted Polymers or Resins?	N	Oxidizers?	N
Debris as defined in 40CFR 268.2?	N	Dioxins?	N
Radioactivity?	N	Asbestos?	N

Reactivity

N/A	Y	Water Reactive	N
Sulfides	N	Shock Sensitive	N
Cyanides	N	Thermally Sensitive	N
Pyrophoric	N	DOT Explosive	N

IV RECYCLING/FUEL BLENDING

Heat Value 0 BTU/lb Water Content 0 % Ash Content 0 % VOC's ≥500ppm N

Total Bromine 0 % Total Iodine 0 % Total Chlorine 0 % Total Sulfur 0 % Total Fluoride 0 %

V LAND DISPOSAL RESTRICTIONS

Treatment Subcategory: Wastewater ___ Nonwastewater ___ Debris ___ Soil ___

Does this waste require identification of Underlying Hazardous Constituents? (D001, D002, D004 - D043) N

If Yes, list all underlying hazardous constituent(s) ___

OK [initials]

VI TOXICITY CHARACTERISTIC CONSTITUENTS

Tracking #: 181502

Constituent	TCLP (ppm)		Total (ppm)	Constituent	TCLP (ppm)		Total (ppm)
D004 Arsenic	0	≥ 5	0	D024 M-Cresol	0	≥ 200	0
D005 Barium	0	≥100	0.034	D025 P-Cresol	0	≥ 200	0
D006 Cadmium	0	≥ 1	0	D026 Cresol	0	≥ 200	0
D007 Chromium	0	≥ 5	0.022	D027 1,4 Dichlorobenzene	0	≥ 7.5	0.086
D008 Lead	0	≥ 5	0	D028 1,2 Dichloroethane	0	≥ 0.5	0
D009 Mercury	0	≥ 0.2	0	D029 1,1 Dichloroethylene	0	≥ 0.7	0.0016
D010 Selenium	0	≥ 1	0	D030 2,4 Dinitrotoluene	0	≥ 0.13	0
D011 Silver	0	≥ 5	0	D031 Heptachlor	0	≥0.008	0
Copper	0	N/A	0	D032 Hexachlorobenzene	0	≥0.13	0
Zinc	0	N/A	0	D033 Hexachlorobutadiene	0	≥ .5	0
Nickel	0	≥134	0	D034 Hexachloroethane	0	≥ 3	0
Thallium	0	N/A	0	D035 Methyl Ethyl Ketone	0	≥200	0
D012 Endrin	0	≥0.02	0	D036 Nitrobenzene	0	≥ 2	0
D013 Lindane	0	≥ 0.4	0	D037 Pentachlorophenol	0	≥100	0
D014 Methoxychlor	0	≥ 10	0	D038 Pyridine	0	≥ 5	0
D015 Toxaphene	0	≥ 0.5	0	D039 Tetrachloroethylene	0	≥ 0.7	0.190
D016 2,4, D	0	≥ 10	0	D040 Trichloroethylene	0	≥ 0.5	0.250
D017 2,4,5 TP (Silvex)	0	≥ 1	0	D041 2,4,5 Trichlorophenol	0	≥ 400	0
D018 Benzene	0	≥0.5	0	D042 2,4,6 Trichlorophenol	0	≥ 2	0
D019 Carbon Tetrachloride	0	≥0.5	0	D043 Vinyl Chloride	0	≥ 0.2	0.0023
D020 Chlordane	0	≥0.03	0	PCB's		≥ 50	0
D021 Chlorobenzene	0	≥100	0.093	Phenolics		N/A	0
D022 Chloroform	0	≥ 6	0	TOC %		N/A	0
D023 O-Cresol	0	≥ 200	0	TOX %		N/A	0

VII SHIPPING INFORMATION/VOLUME

Volume

___ 5 Gal Pail ___ Cu Yd Bx
___ 10 Gal Drum ___ Pallet
___ 20 Gal Drum ___ Tons
___ 30 Gal Drum ___ Cu.Yds
3 55 Gal Drum ___ Gallons
___ 85 Gal Drum ___ 110 Gal Drum

Frequency

Y One Time
___ Weekly
___ Monthly
___ Quarterly
___ Yearly

DOT Information

Shipping Name Purge water, Non-regulated material

UN/NA # ___ Hazard Class ___ Packing Group ___

RQ ___ lbs. ERG # ___ Hazardous Material? ___

Is this material a marine pollutant? N

VIII ATTACHMENTS

MSDS ___ Sample ___ Lab Analysis ___ Other Attachments ___

IX GENERATORS CERTIFICATION

I hereby certify that all information submitted in this document and all attachments is a complete and accurate description of all the known and suspected hazards of this waste material. I also hereby authorize CEI personnel to add any supplemental information provided I am contacted to give verbal permission. I also authorize CEI personnel to transpose the information contained on this document onto non-CEI waste profile documents and to sign said documents as our agent.

Signature [signature] Printed Name Gregory J. Van Hook

Company Name Van Hook Properties, Inc. Title Pres Date 5/10/04

Please print or type.
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. [illegible]	Manifest Doc. No. [illegible]	2. Page 1 of [illegible]
3. Generator's Name and Mailing Address [illegible]			
4. Generator's Phone ([illegible]			
5. Transporter 1 Company Name [illegible]	6. US EPA ID Number [illegible]	A. Transporter's Phone [illegible]	
7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone	
9. Designated Facility Name and Site Address [illegible]	10. US EPA ID Number [illegible]	C. Facility's Phone [illegible]	

11. Waste Shipping Name and Description	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Soil cuttings, Non-regulated material	[illegible]	[illegible]	[illegible]	
b.				
c.				
d.				

GENERATOR

D. Additional Descriptions for Materials Listed Above	E. Handling Codes for Wastes Listed Above
[illegible]	

15. Special Handling Instructions and Additional Information

[illegible]

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

Printed by J. J. KELLER & ASSOCIATES, INC.
Neenah, WI 54957-0368

12-BLS-C6 Rev. 12/98

GENERATOR'S COPY

Denise Goddard/R4/USEPA/US
09/19/2005 11:00 AM

To Jon Bornholm/R4/USEPA/US@EPA, William Joyner/R4/USEPA/US@EPA
cc teresa.booeshaghi@dep.state.fl.us, allencj@bv.vom
bcc
Subject Fw: DQRs 34522 and 34429

Hi, Folks....See attached DQRs below....Denise

----- Forwarded by Denise Goddard/R4/USEPA/US on 09/19/2005 10:38 AM -----

Jim Chandler - ILS
<jchandler@ils-inc.com>
09/16/2005 04:17 PM

To Denise Goddard/R4/USEPA/US@EPA
cc
Subject DQRs 34522 and 34429

DQR34429iC.wpd DQR34522iC.wpd

Accurate plating & Weponly
Clearwater, FL

September 9, 2005

INORGANIC DATA QUALIFIERS REPORT

Case Number: 34522
Project Number: 05-0813
Site: Former Accurate Plating and Weaponry, Clearwater, FL

Sample No.	Element	Flag	Reason
8852	Al	U	Positives in cal and prep blanks
	Fe	UJ	Matrix spike recovery = 143% Positives in cal blanks
	Na	J	Serial dilution % difference = 18% PE sample recovery < warning limit
8853	Al	U	Positives in cal and prep blanks
	Fe	J	Matrix spike recovery = 143%
	Hg	U	Baseline instability in cal blanks
	Na	J	Serial dilution % difference = 18% PE sample recovery < warning limit
	CN	U	Baseline instability in cal and prep blanks
8854	Cu	J	PE sample recovery > action limit
	CN	U	Baseline instability in cal and prep blanks
8855	Cu	J	PE sample recovery > action limit
	Hg	U	Baseline instability in cal blanks
	CN	U	Baseline instability in cal and prep blanks
8856	Cu	J	PE sample recovery > action limit
	CN	U	Baseline instability in cal and prep blanks
8857	Cu	J	PE sample recovery > action limit
	CN	U	Baseline instability in cal and prep blanks
8858	Cu	J	PE sample recovery > action limit
	CN	U	Baseline instability in cal and prep blanks
8859	Cu	J	PE sample recovery > action limit
	CN	U	Baseline instability in cal and prep blanks
8860	As	J	% RSD > 20% for ICP multiple exposures
	Cu	J	PE sample recovery > action limit
	Hg	U	Baseline instability in cal blanks
	CN	U	Baseline instability in cal and prep blanks
8861	Cu	J	PE sample recovery > action limit
	CN	U	Baseline instability in cal and prep blanks
8862	Cu	J	PE sample recovery > action limit
	Co	R	Analyte reported as potential false positive

September 9, 2005

INORGANIC DATA QUALIFIERS REPORT (Continued)

Case Number: 34522

Project Number: 05-0813

Site: Former Accurate Plating and Weaponry, Clearwater, FL

Sample No.	Element	Flag	Reason
8863	Al	U	Positives in cal and prep blanks
	Sb	R	Analyte reported as potential false positive
	As	U	Baseline instability in cal blanks
	Fe	J	Matrix spike recovery = 143%
	Hg	U	Baseline instability in cal blanks
	Na	J	Serial dilution % difference = 18%
			PE sample recovery < warning limit
	CN	U	Baseline instability in cal and prep blanks
8864	Al	U	Positives in cal and prep blanks
	Sb	R	Analyte reported as potential false positive
	Fe	J	Matrix spike recovery = 143%
	Hg	U	Baseline instability in cal blanks
	Na	J	Serial dilution % difference = 18%
			PE sample recovery < warning limit
	CN	U	Baseline instability in cal and prep blanks
8865	Al	U	Positives in cal and prep blanks
	As	U	Baseline instability in cal blanks
	Fe	J	Matrix spike recovery = 143%
	Se	R	Analyte reported as potential false positive
	Na	J	Serial dilution % difference = 18%
			PE sample recovery < warning limit
	CN	U	Baseline instability in cal and prep blanks
8866	As	U	Baseline instability in cal blanks
	Fe	J	Matrix spike recovery = 143%
	Hg	U	Baseline instability in cal blanks
	Na	J	Serial dilution % difference = 18%
			PE sample recovery < warning limit
	CN	U	Baseline instability in cal and prep blanks
8867	Al	U	Positives in cal and prep blanks
	Sb	R	Analyte reported as potential false positive
	Fe	J	Matrix spike recovery = 143%
	Hg	U	Baseline instability in cal blanks
	Na	J	Serial dilution % difference = 18%
			PE sample recovery < warning limit
	CN	U	Baseline instability in cal and prep blanks

R4LIMS@EPA
09/23/2005 10:46 PM

To William Joyner/R4/USEPA/US@EPA
cc Nardina Turner/R4/USEPA/US@EPA, Teresa.Booeshaghi@dep.state.fl.us
bcc
Subject R4LIMS Project 05-0813, MTL Analyses Completed

As of COB, Friday, September 23, 2005 the following results have been released in R4LIMS by the Region 4 Laboratory:

Analyses: METALS
Project Number: 05-0813
Facility: Former Accurate Plating & Weaponry
City: Clearwater **County:** Pinellas **State:** FL

These results were laboratory branch-released in R4LIMS by:
Denise Goddard (E-mail: Goddard.Denise@epa.gov)

These results are for the following Sample Type(s)
Type 1 - water FIELD QC
Type 1 - water GROUNDWATER
Type 2 - soil SEDIMENT
Type 2 - soil SUBSURFACE SOIL
Type 2 - soil SURFACE SOIL

As project leader, these results are now available for you to print and/or export from within the R4LIMS application. If you wish for other R4LIMS users to have electronic access to this data you will need to perform a "Public Release" from within the R4LIMS application.

PDF DATASHEET FILE ATTACHMENT:
An Adobe Acrobat PDF file is attached to this message. It contains printouts of the datasheets, excluding results for Performance Evaluation samples (ie, excludes sedimspk, watspk, sedimblk, and qa/pes samples).

DBF DATA FILE ATTACHMENT:
As requested in the R4LIMS Project Log,
METALS results for Project Number 05-0813,
excluding results for Performance Evaluation samples,
are contained in a ZIP file (.DAT extension) attached to this message.
NOTE: This information is contained in a file that has been formatted using the ZIP archiving format. Upon download and unzipping of ZIP files you should have several separate files, including an ASCII text file called READTHIS.TXT that will contain more information about the files and how they can be utilized.

For questions concerning this message, attachments, printing, exporting, public

releasing,
or any other R4LIMS issues, please call the SESD PC Hotline at 706-355-8825
or send an email to r4lims@epa.gov.

If you have questions concerning the laboratory results, please feel free to contact the laboratory personnel shown above as having released the data. We also encourage you to provide feedback to the Region 4 laboratory by filling out our online (*EPA internal network only*) Customer Survey Form.

05-0813-MTL-092305.pdf 05-0813-MTL-092305.dat

METALS SAMPLE ANALYSIS   EPA - REGION IV SESD, ATHENS, GA   **Production Date: 09/23/2005 10:19**

Sample **8852** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry   Clearwater, FL

Program: SF   Case No: 34522

Id/Station: APWMB01 /   MD No: 38S1   Inorg Contractor: CHEM

Media: FIELD QC

Produced by: Goddard, Denise
Requestor:
Project Leader: WJOYNER
Beginning: 08/04/2005
Ending:

RESULTS	UNITS	ANALYTE
83 UJ	UG/L	Aluminum
3.7 J	UG/L	Antimony
10 U	UG/L	Arsenic
200 U	UG/L	Barium
5.0 U	UG/L	Beryllium
5.0 U	UG/L	Cadmium
1500 J	UG/L	Calcium
10 U	UG/L	Chromium
50 U	UG/L	Cobalt
5.2 J	UG/L	Copper
30 UJ	UG/L	Iron
10 U	UG/L	Lead
330 J	UG/L	Magnesium
0.97 J	UG/L	Manganese
0.20 U	UG/L	Total Mercury
40 U	UG/L	Nickel
5000 U	UG/L	Potassium
35 U	UG/L	Selenium
10 U	UG/L	Silver
5000 UJ	UG/L	Sodium
25 U	UG/L	Thallium
50 U	UG/L	Vanadium
46 J	UG/L	Zinc
NA	UG/L	Cyanide

Cyanide Analysis Not Requested

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

METALS SAMPLE ANALYSIS **EPA - REGION IV SESD, ATHENS, GA** **Production Date: 09/23/2005 10:19**

Sample **8853** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF Case No: 34522

Id/Station: APWEB01 / MD No: 38S0 Inorg Contractor: CHEM

Media: FIELD QC

Produced by: Goddard, Denise
Requestor:
Project Leader: WJOYNER
Beginning: 08/09/2005 08:00
Ending:

RESULTS	UNITS	ANALYTE
81 UJ	UG/L	Aluminum
3.5 J	UG/L	Antimony
10 U	UG/L	Arsenic
200 U	UG/L	Barium
5.0 U	UG/L	Beryllium
5.0 U	UG/L	Cadmium
1500 J	UG/L	Calcium
10 U	UG/L	Chromium
50 U	UG/L	Cobalt
5.9 J	UG/L	Copper
100 UJ	UG/L	Iron
10 U	UG/L	Lead
2200 J	UG/L	Magnesium
1.1 J	UG/L	Manganese
0.07 UJ	UG/L	Total Mercury
40 U	UG/L	Nickel
6900	UG/L	Potassium
35 U	UG/L	Selenium
10 U	UG/L	Silver
3400 J	UG/L	Sodium
25 U	UG/L	Thallium
50 U	UG/L	Vanadium
29 J	UG/L	Zinc
10 UJ	UG/L	Cyanide

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

METALS SAMPLE ANALYSIS | EPA - REGION IV SESD, ATHENS, GA | **Production Date: 09/23/2005 10:19**

Sample **8854** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry | Clearwater, FL

Program: SF | Case No: 34522

Id/Station: APWSB016 / | MD No: 38S2 | Inorg Contractor: CHEM

Media: SUBSURFACE SOIL

Produced by: Goddard, Denise

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 09:00

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
840	MG/KG	Aluminum
7.4 U	MG/KG	Antimony
1.2 U	MG/KG	Arsenic
6.1 J	MG/KG	Barium
0.08 J	MG/KG	Beryllium
0.61 U	MG/KG	Cadmium
2800	MG/KG	Calcium
8.2	MG/KG	Chromium
0.29 J	MG/KG	Cobalt
5.2 J	MG/KG	Copper
560	MG/KG	Iron
12	MG/KG	Lead
120 J	MG/KG	Magnesium
12	MG/KG	Manganese
0.12 U	MG/KG	Total Mercury
3.1 J	MG/KG	Nickel
19 J	MG/KG	Potassium
4.3 U	MG/KG	Selenium
1.2 U	MG/KG	Silver
610 U	MG/KG	Sodium
3.1 U	MG/KG	Thallium
3.6 J	MG/KG	Vanadium
13	MG/KG	Zinc
0.12 UJ	MG/KG	Cyanide
19	%	% Moisture

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

METALS SAMPLE ANALYSIS **EPA - REGION IV SESD, ATHENS, GA** **Production Date: 09/23/2005 10:19**

Sample **8855** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF Case No: 34522

Id/Station: APWSED1 / MD No: 38S3 Inorg Contractor: CHEM

Media: SEDIMENT

Produced by: Goddard, Denise
Requestor:
Project Leader: WJOYNER
Beginning: 08/10/2005 09:20
Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
850	MG/KG	Aluminum
9.2 U	MG/KG	Antimony
1.5 U	MG/KG	Arsenic
9.2 J	MG/KG	Barium
0.11 J	MG/KG	Beryllium
0.76 U	MG/KG	Cadmium
35000	MG/KG	Calcium
9.3	MG/KG	Chromium
0.50 J	MG/KG	Cobalt
25 J	MG/KG	Copper
1900	MG/KG	Iron
14	MG/KG	Lead
430 J	MG/KG	Magnesium
20	MG/KG	Manganese
0.10 UJ	MG/KG	Total Mercury
2.2 J	MG/KG	Nickel
88 J	MG/KG	Potassium
5.3 U	MG/KG	Selenium
1.5 U	MG/KG	Silver
260 J	MG/KG	Sodium
3.8 U	MG/KG	Thallium
3.7 J	MG/KG	Vanadium
86	MG/KG	Zinc
0.22 UJ	MG/KG	Cyanide
35	%	% Moisture

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

METALS SAMPLE ANALYSIS **EPA - REGION IV SESD, ATHENS, GA** **Production Date: 09/23/2005 10:19**

Sample **8856** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF Case No: 34522

Id/Station: APWSED2 / MD No: 38S4 Inorg Contractor: CHEM

Media: SEDIMENT

Produced by: Goddard, Denise

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 09:35

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
480	MG/KG	Aluminum
8.2 U	MG/KG	Antimony
1.4 U	MG/KG	Arsenic
4.8 J	MG/KG	Barium
0.05 J	MG/KG	Beryllium
0.68 U	MG/KG	Cadmium
15000	MG/KG	Calcium
7.6	MG/KG	Chromium
0.22 J	MG/KG	Cobalt
5.8 J	MG/KG	Copper
530	MG/KG	Iron
12	MG/KG	Lead
260 J	MG/KG	Magnesium
6.7	MG/KG	Manganese
0.14 U	MG/KG	Total Mercury
4.3 J	MG/KG	Nickel
29 J	MG/KG	Potassium
4.8 U	MG/KG	Selenium
1.4 U	MG/KG	Silver
160 J	MG/KG	Sodium
3.4 U	MG/KG	Thallium
2.1 J	MG/KG	Vanadium
30	MG/KG	Zinc
0.16 UJ	MG/KG	Cyanide
27	%	% Moisture

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Sample **8857** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF Case No: 34522

Id/Station: APWSED3 / MD No: 38S5 Inorg Contractor: CHEM

Media: SEDIMENT

Produced by: Goddard, Denise

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 09:40

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
560	MG/KG	Aluminum
8.1 U	MG/KG	Antimony
1.4 U	MG/KG	Arsenic
4.1 J	MG/KG	Barium
0.05 J	MG/KG	Beryllium
1.1	MG/KG	Cadmium
5400	MG/KG	Calcium
15	MG/KG	Chromium
0.34 J	MG/KG	Cobalt
10 J	MG/KG	Copper
540	MG/KG	Iron
13	MG/KG	Lead
150 J	MG/KG	Magnesium
4.5	MG/KG	Manganese
0.14 U	MG/KG	Total Mercury
2.9 J	MG/KG	Nickel
29 J	MG/KG	Potassium
4.7 U	MG/KG	Selenium
1.4 U	MG/KG	Silver
680 U	MG/KG	Sodium
3.4 U	MG/KG	Thallium
2.2 J	MG/KG	Vanadium
50	MG/KG	Zinc
0.09 UJ	MG/KG	Cyanide
28	%	% Moisture

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

METALS SAMPLE ANALYSIS **EPA - REGION IV SESD, ATHENS, GA** **Production Date: 09/23/2005 10:19**

Sample **8858** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL
Program: SF Case No: 34522
Id/Station: APWSED4 / MD No: 38S6 Inorg Contractor: CHEM
Media: SEDIMENT

Produced by: Goddard, Denise
Requestor:
Project Leader: WJOYNER
Beginning: 08/10/2005 09:45
Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
630	MG/KG	Aluminum
7.7 U	MG/KG	Antimony
1.3 U	MG/KG	Arsenic
4.1 J	MG/KG	Barium
0.05 J	MG/KG	Beryllium
0.64 U	MG/KG	Cadmium
3900	MG/KG	Calcium
11	MG/KG	Chromium
0.33 J	MG/KG	Cobalt
9.7 J	MG/KG	Copper
590	MG/KG	Iron
11	MG/KG	Lead
150 J	MG/KG	Magnesium
3.6	MG/KG	Manganese
0.13 U	MG/KG	Total Mercury
2.3 J	MG/KG	Nickel
26 J	MG/KG	Potassium
4.5 U	MG/KG	Selenium
1.3 U	MG/KG	Silver
640 U	MG/KG	Sodium
3.2 U	MG/KG	Thallium
2.0 J	MG/KG	Vanadium
49	MG/KG	Zinc
0.09 UJ	MG/KG	Cyanide
23	%	% Moisture

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

METALS SAMPLE ANALYSIS **EPA - REGION IV SESD, ATHENS, GA** **Production Date: 09/23/2005 10:19**

Sample **8859** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL
Program: SF Case No: 34522
Id/Station: APWSED5 / MD No: 38S7 Inorg Contractor: CHEM
Media: SEDIMENT

Produced by: Goddard, Denise
Requestor:
Project Leader: WJOYNER
Beginning: 08/10/2005 09:50
Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
840	MG/KG	Aluminum
9.2 U	MG/KG	Antimony
1.5 U	MG/KG	Arsenic
7.1 J	MG/KG	Barium
0.06 J	MG/KG	Beryllium
0.77 U	MG/KG	Cadmium
3800	MG/KG	Calcium
40	MG/KG	Chromium
0.59 J	MG/KG	Cobalt
19 J	MG/KG	Copper
900	MG/KG	Iron
18	MG/KG	Lead
330 J	MG/KG	Magnesium
7.4	MG/KG	Manganese
0.15 U	MG/KG	Total Mercury
6.5	MG/KG	Nickel
79 J	MG/KG	Potassium
5.4 U	MG/KG	Selenium
1.5 U	MG/KG	Silver
770 U	MG/KG	Sodium
3.8 U	MG/KG	Thallium
3.2 J	MG/KG	Vanadium
63	MG/KG	Zinc
0.12 UJ	MG/KG	Cyanide
35	%	% Moisture

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Sample **8860** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry   Clearwater, FL

Program: SF   Case No: 34522

Id/Station: APWSS011 /   MD No: 38S8   Inorg Contractor: CHEM

Media: SURFACE SOIL

Produced by: Goddard, Denise
Requestor:
Project Leader: WJOYNER
Beginning: 08/10/2005 08:20
Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
3000	MG/KG	Aluminum
7.1 U	MG/KG	Antimony
1.2 J	MG/KG	Arsenic
17 J	MG/KG	Barium
0.15 J	MG/KG	Beryllium
0.24 J	MG/KG	Cadmium
41000	MG/KG	Calcium
11	MG/KG	Chromium
0.67 J	MG/KG	Cobalt
7.1 J	MG/KG	Copper
2600	MG/KG	Iron
12	MG/KG	Lead
560 J	MG/KG	Magnesium
44	MG/KG	Manganese
0.05 UJ	MG/KG	Total Mercury
3.8 J	MG/KG	Nickel
58 J	MG/KG	Potassium
4.2 U	MG/KG	Selenium
1.2 U	MG/KG	Silver
290 J	MG/KG	Sodium
3.0 U	MG/KG	Thallium
5.9 J	MG/KG	Vanadium
33	MG/KG	Zinc
0.10 UJ	MG/KG	Cyanide
17	%	% Moisture

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Sample **8861** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF Case No: 34522

Id/Station: APWSS021 / MD No: 38S9 Inorg Contractor: CHEM

Media: SURFACE SOIL

Produced by: Goddard, Denise

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 08:30

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
1500	MG/KG	Aluminum
16	MG/KG	Antimony
2.2	MG/KG	Arsenic
81	MG/KG	Barium
0.16 J	MG/KG	Beryllium
1.7	MG/KG	Cadmium
38000	MG/KG	Calcium
170	MG/KG	Chromium
4.7 J	MG/KG	Cobalt
210 J	MG/KG	Copper
11000	MG/KG	Iron
1200	MG/KG	Lead
720	MG/KG	Magnesium
79	MG/KG	Manganese
0.27	MG/KG	Total Mercury
850	MG/KG	Nickel
120 J	MG/KG	Potassium
4.9 U	MG/KG	Selenium
0.53 J	MG/KG	Silver
410 J	MG/KG	Sodium
3.5 U	MG/KG	Thallium
4.9 J	MG/KG	Vanadium
850	MG/KG	Zinc
0.26 UJ	MG/KG	Cyanide
29	%	% Moisture

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Sample **8862** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL
Program: SF Case No: 34522
Id/Station: APWSS031 / MD No: 38T0 Inorg Contractor: CHEM
Media: SURFACE SOIL

Produced by: Goddard, Denise
Requestor:
Project Leader: WJOYNER
Beginning: 08/10/2005 08:35
Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
570	MG/KG	Aluminum
6.9 U	MG/KG	Antimony
1.2 U	MG/KG	Arsenic
15 J	MG/KG	Barium
0.04 J	MG/KG	Beryllium
0.58 U	MG/KG	Cadmium
5200	MG/KG	Calcium
150	MG/KG	Chromium
0.21 R	MG/KG	Cobalt
24 J	MG/KG	Copper
1300	MG/KG	Iron
80	MG/KG	Lead
120 J	MG/KG	Magnesium
5.1	MG/KG	Manganese
0.11 U	MG/KG	Total Mercury
12	MG/KG	Nickel
37 J	MG/KG	Potassium
4.0 U	MG/KG	Selenium
1.2 U	MG/KG	Silver
580 U	MG/KG	Sodium
2.9 U	MG/KG	Thallium
1.4 J	MG/KG	Vanadium
640	MG/KG	Zinc
3.0	MG/KG	Cyanide
14	%	% Moisture

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Sample **8863** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF Case No: 34522

Id/Station: HSAMW7 / MD No: 38T3 Inorg Contractor: CHEM

Media: GROUNDWATER

Produced by: Goddard, Denise
Requestor:
Project Leader: WJOYNER
Beginning: 08/09/2005 15:50
Ending:

RESULTS	UNITS	ANALYTE
210 U	UG/L	Aluminum
4.3 R	UG/L	Antimony
5.0 UJ	UG/L	Arsenic
47 J	UG/L	Barium
5.0 U	UG/L	Beryllium
5.0 U	UG/L	Cadmium
79000	UG/L	Calcium
2.5 J	UG/L	Chromium
50 U	UG/L	Cobalt
6.4 J	UG/L	Copper
2000 J	UG/L	Iron
10 U	UG/L	Lead
5100	UG/L	Magnesium
7.0 J	UG/L	Manganese
0.11 UJ	UG/L	Total Mercury
2.6 J	UG/L	Nickel
3600 J	UG/L	Potassium
35 U	UG/L	Selenium
3.1 J	UG/L	Silver
23000 J	UG/L	Sodium
25 U	UG/L	Thallium
47 J	UG/L	Vanadium
88	UG/L	Zinc
10 UJ	UG/L	Cyanide

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

METALS SAMPLE ANALYSIS **EPA - REGION IV SESD, ATHENS, GA** **Production Date: 09/23/2005 10:19**

Sample **8864** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF Case No: 34522

Id/Station: NMW1 / MD No: 38T4 Inorg Contractor: CHEM

Media: GROUNDWATER

Produced by: Goddard, Denise
Requestor:
Project Leader: WJOYNER
Beginning: 08/09/2005 12:45
Ending:

RESULTS	UNITS	ANALYTE
150 UJ	UG/L	Aluminum
5.0 R	UG/L	Antimony
10 U	UG/L	Arsenic
21 J	UG/L	Barium
5.0 U	UG/L	Beryllium
5.0 U	UG/L	Cadmium
98000	UG/L	Calcium
2.9 J	UG/L	Chromium
50 U	UG/L	Cobalt
27	UG/L	Copper
7800 J	UG/L	Iron
10 U	UG/L	Lead
9900	UG/L	Magnesium
95	UG/L	Manganese
0.15 UJ	UG/L	Total Mercury
40 U	UG/L	Nickel
2200 J	UG/L	Potassium
35 U	UG/L	Selenium
4.6 J	UG/L	Silver
32000 J	UG/L	Sodium
25 U	UG/L	Thallium
8.2 J	UG/L	Vanadium
40 J	UG/L	Zinc
10 UJ	UG/L	Cyanide

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

METALS SAMPLE ANALYSIS **EPA - REGION IV SESD, ATHENS, GA** **Production Date: 09/23/2005 10:19**

Sample **8865** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL
Program: SF Case No: 34522
Id/Station: NMW2 / MD No: 38T5 Inorg Contractor: CHEM
Media: GROUNDWATER

Produced by: Goddard, Denise
Requestor:
Project Leader: WJOYNER
Beginning: 08/09/2005 12:25
Ending:

RESULTS	UNITS	ANALYTE
280 U	UG/L	Aluminum
5.2 J	UG/L	Antimony
7.7 UJ	UG/L	Arsenic
22 J	UG/L	Barium
5.0 U	UG/L	Beryllium
5.0 U	UG/L	Cadmium
22000	UG/L	Calcium
4.9 J	UG/L	Chromium
50 U	UG/L	Cobalt
5.2 J	UG/L	Copper
2100 J	UG/L	Iron
10 U	UG/L	Lead
9000	UG/L	Magnesium
7.5 J	UG/L	Manganese
0.20 U	UG/L	Total Mercury
40 U	UG/L	Nickel
2900 J	UG/L	Potassium
5.4 R	UG/L	Selenium
10 U	UG/L	Silver
26000 J	UG/L	Sodium
25 U	UG/L	Thallium
21 J	UG/L	Vanadium
27 J	UG/L	Zinc
10 UJ	UG/L	Cyanide

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Sample **8866** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF Case No: 34522

Id/Station: NMW3 / MD No: 38T6 Inorg Contractor: CHEM

Media: GROUNDWATER

Produced by: Goddard, Denise
Requestor:
Project Leader: WJOYNER
Beginning: 08/09/2005 10:10
Ending:

RESULTS	UNITS	ANALYTE
640	UG/L	Aluminum
5.6 J	UG/L	Antimony
6.0 UJ	UG/L	Arsenic
18 J	UG/L	Barium
5.0 U	UG/L	Beryllium
5.0 U	UG/L	Cadmium
9400	UG/L	Calcium
11	UG/L	Chromium
2.7 J	UG/L	Cobalt
6.3 J	UG/L	Copper
2400 J	UG/L	Iron
10 U	UG/L	Lead
4100 J	UG/L	Magnesium
3.7 J	UG/L	Manganese
0.09 UJ	UG/L	Total Mercury
3.5 J	UG/L	Nickel
980 J	UG/L	Potassium
35 U	UG/L	Selenium
10 U	UG/L	Silver
38000 J	UG/L	Sodium
25 U	UG/L	Thallium
16 J	UG/L	Vanadium
45 J	UG/L	Zinc
10 UJ	UG/L	Cyanide

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Sample **8867** FY **2005** Project: **05-0813**

Metals Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF Case No: 34522

Id/Station: NMW4 / MD No: 38T7 Inorg Contractor: CHEM

Media: GROUNDWATER

Produced by: Goddard, Denise

Requestor:

Project Leader: WJOYNER

Beginning: 08/09/2005 10:45

Ending:

RESULTS	UNITS	ANALYTE
380 U	UG/L	Aluminum
3.1 R	UG/L	Antimony
10 U	UG/L	Arsenic
18 J	UG/L	Barium
5.0 U	UG/L	Beryllium
5.0 U	UG/L	Cadmium
21000	UG/L	Calcium
4.7 J	UG/L	Chromium
1.9	UG/L	Cobalt
4.8 J	UG/L	Copper
2400 J	UG/L	Iron
10 U	UG/L	Lead
5100	UG/L	Magnesium
7.1 J	UG/L	Manganese
0.06 UJ	UG/L	Total Mercury
3.3 J	UG/L	Nickel
1100 J	UG/L	Potassium
35 U	UG/L	Selenium
10 U	UG/L	Silver
36000 J	UG/L	Sodium
25 U	UG/L	Thallium
18 J	UG/L	Vanadium
40 J	UG/L	Zinc
10 J	UG/L	Cyanide

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than the reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

R4LIMS@EPA
09/26/2005 10:46 PM

To William Joyner/R4/USEPA/US@EPA
cc Nardina Turner/R4/USEPA/US@EPA, Teresa.Booeshaghi@dep.state.fl.us, Jesus.Diaz@dep.state.fl.us
bcc
Subject R4LIMS Project 05-0790, VOA Analyses Completed

As of COB, Monday, September 26, 2005 the following results have been released in R4LIMS by the Region 4 Laboratory:

Analyses: VOLATILES
Project Number: 05-0790
Facility: Former Accurate Plating & Weaponry
City: Clearwater **County:** Pinellas **State:** FL

These results were laboratory branch-released in R4LIMS by:
Dennis Revell (E-mail: Revell.Dennis@epa.gov)

These results are for the following Sample Type(s)
Type 1 - water EQUIPMENT RINSE BLANK
Type 1 - water GROUNDWATER
Type 1 - water TRIP BLANK - WATER
Type 2 - soil SEDIMENT
Type 2 - soil SUBSURFACE SOIL
Type 2 - soil SURFACE SOIL

As project leader, these results are now available for you to print and/or export from within the R4LIMS application. If you wish for other R4LIMS users to have electronic access to this data you will need to perform a "Public Release" from within the R4LIMS application.

PDF DATASHEET FILE ATTACHMENT:
An Adobe Acrobat PDF file is attached to this message. It contains printouts of the datasheets, excluding results for Performance Evaluation samples (ie, excludes sedimspk, watspk, sedimblk, and qa/pes samples).

DBF DATA FILE ATTACHMENT:
As requested in the R4LIMS Project Log,
VOLATILES results for Project Number 05-0790,
excluding results for Performance Evaluation samples,
are contained in a ZIP file (.DAT extension) attached to this message.
NOTE: This information is contained in a file that has been formatted using the ZIP archiving format. Upon download and unzipping of ZIP files you should have several separate files, including an ASCII text file called READTHIS.TXT that will contain more information about the files and how they can be utilized.

For questions concerning this message, attachments, printing, exporting, public releasing,
or any other R4LIMS issues, please call the SESD PC Hotline at 706-355-8825
or send an email to r4lims@epa.gov.

If you have questions concerning the laboratory results, please feel free to contact the laboratory personnel shown above as having released the data. We also encourage you to provide feedback to the Region 4 laboratory by filling out our online (*EPA internal network only*) Customer Survey Form.

SAMPLE DISPOSAL POLICY:
According to our records this project is not part of a criminal investigation. Because of our limited space for long term sample storage, we must perform disposals on a routine basis.

Therefore, please take note that within 90 days of the date of this memo, the original samples and all extracts associated with the samples will be disposed of as required by all applicable and appropriate statutes.

These samples may be held in custody for longer than 90 days only by contacting our sample coordinator, Debbie Colquitt, by e-mail at Colquitt.Debbie@epa.gov.

05-0790-VOA-092605.pdf 05-0790-VOA-092605.dat

Sample **7833** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry　Clearwater, FL
Program: SF
Id/Station: D0001 / NMW-1
Media: GROUNDWATER

Produced by: Hale, Sallie
Requestor:
Project Leader: WJOYNER
Beginning: 08/09/2005 12:45
Ending:

RESULTS	UNITS	ANALYTE
1.0 U	UG/L	Dichlorodifluoromethane
1.0 U	UG/L	Chloromethane
1.0 U	UG/L	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
0.16 J	UG/L	Methyl T-Butyl Ether (MTBE)
1.0 UJ	UG/L	Bromomethane
1.0 U	UG/L	Cyclohexane
1.0 U	UG/L	Vinyl Chloride
1.0 U	UG/L	Chloroethane
1.0 U	UG/L	Trichlorofluoromethane (Freon 11)
1.0 U	UG/L	1,1-Dichloroethene (1,1-Dichloroethylene)
1.0 U	UG/L	Methylene Chloride
2.0 U	UG/L	Acetone
1.0 U	UG/L	Carbon Disulfide
1.0 U	UG/L	Methyl Acetate
1.0 U	UG/L	1,1-Dichloroethane
0.62 J	UG/L	cis-1,2-Dichloroethene
1.0 U	UG/L	2,2-Dichloropropane
5.0 U	UG/L	Methyl Ethyl Ketone
1.0 U	UG/L	Bromochloromethane
1.0 U	UG/L	trans-1,2-Dichloroethene
1.0 U	UG/L	Chloroform
1.0 U	UG/L	1,2-Dichloroethane
1.0 U	UG/L	1,1,1-Trichloroethane
1.0 U	UG/L	1,1-Dichloropropene
1.0 U	UG/L	Carbon Tetrachloride
1.0 U	UG/L	Bromodichloromethane
1.0 U	UG/L	Methyl Isobutyl Ketone
1.0 U	UG/L	1,2-Dichloropropane
1.0 U	UG/L	Methylcyclohexane
1.0 U	UG/L	Dibromomethane
1.0 U	UG/L	trans-1,3-Dichloropropene
0.16 J	UG/L	Trichloroethene (Trichloroethylene)
0.12 J	UG/L	Benzene
1.0 U	UG/L	Dibromochloromethane
1.0 U	UG/L	1,1,2-Trichloroethane

RESULTS	UNITS	ANALYTE
1.0 U	UG/L	cis-1,3-Dichloropropene
1.0 U	UG/L	Bromoform
1.0 U	UG/L	Bromobenzene
1.0 U	UG/L	1,1,2,2-Tetrachloroethane
0.18 J	UG/L	Tetrachloroethene (Tetrachloroethylene)
1.0 U	UG/L	1,3-Dichloropropane
2.0 U	UG/L	Methyl Butyl Ketone
0.14 J	UG/L	Toluene
0.33 J	UG/L	Chlorobenzene
1.0 U	UG/L	1,1,1,2-Tetrachloroethane
1.0 U	UG/L	Ethyl Benzene
2.0 U	UG/L	(m- and/or p-)Xylene
1.0 U	UG/L	o-Xylene
1.0 U	UG/L	Styrene
1.0 U	UG/L	1,2,3-Trichloropropane
1.0 U	UG/L	o-Chlorotoluene
1.0 U	UG/L	p-Chlorotoluene
1.0 U	UG/L	1,3-Dichlorobenzene
1.0 U	UG/L	1,4-Dichlorobenzene
0.29 J	UG/L	1,2-Dichlorobenzene
1.0 U	UG/L	1,2-Dibromoethane (EDB)
1.0 U	UG/L	Isopropylbenzene
1.0 U	UG/L	n-Propylbenzene
1.0 U	UG/L	1,3,5-Trimethylbenzene
1.0 U	UG/L	tert-Butylbenzene
1.0 U	UG/L	1,2,4-Trimethylbenzene
1.0 U	UG/L	sec-Butylbenzene
0.27 J	UG/L	p-Isopropyltoluene
1.0 U	UG/L	n-Butylbenzene
2.0 U	UG/L	1,2-Dibromo-3-Chloropropane (DBCP)
1.0 U	UG/L	1,2,4-Trichlorobenzene
1.0 UJ	UG/L	Hexachloro-1,3-Butadiene
1.0 U	UG/L	1,2,3-Trichlorobenzene

Bromomethane J-qualified due to low recovery in CCV
J-qualified compound values less than 1.0 are >MDL but <MQL

Hexachlorobutadiene % recovery was low in LCSD.

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

VOLATILES SAMPLE ANALYSIS **EPA - REGION IV SESD, ATHENS, GA** **Production Date: 09/26/2005 10:48**

Sample **7834** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0002 / HSAMW-7

Media: GROUNDWATER

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/09/2005 15:50

Ending:

RESULTS	UNITS	ANALYTE
1.0 U	UG/L	Dichlorodifluoromethane
1.0 U	UG/L	Chloromethane
1.0 U	UG/L	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
0.18 J	UG/L	Methyl T-Butyl Ether (MTBE)
1.0 UJ	UG/L	Bromomethane
1.0 U	UG/L	Cyclohexane
1.0 U	UG/L	Vinyl Chloride
1.0 U	UG/L	Chloroethane
1.0 U	UG/L	Trichlorofluoromethane (Freon 11)
1.0 U	UG/L	1,1-Dichloroethene (1,1-Dichloroethylene)
1.0 U	UG/L	Methylene Chloride
2.0 U	UG/L	Acetone
1.0 U	UG/L	Carbon Disulfide
1.0 U	UG/L	Methyl Acetate
1.0 U	UG/L	1,1-Dichloroethane
0.18 J	UG/L	cis-1,2-Dichloroethene
1.0 U	UG/L	2,2-Dichloropropane
5.0 U	UG/L	Methyl Ethyl Ketone
1.0 U	UG/L	Bromochloromethane
1.0 U	UG/L	trans-1,2-Dichloroethene
1.0 U	UG/L	Chloroform
1.0 U	UG/L	1,2-Dichloroethane
1.0 U	UG/L	1,1,1-Trichloroethane
1.0 U	UG/L	1,1-Dichloropropene
1.0 U	UG/L	Carbon Tetrachloride
1.0 U	UG/L	Bromodichloromethane
1.0 U	UG/L	Methyl Isobutyl Ketone
1.0 U	UG/L	1,2-Dichloropropane
1.0 U	UG/L	Methylcyclohexane
1.0 U	UG/L	Dibromomethane
1.0 U	UG/L	trans-1,3-Dichloropropene
1.0 U	UG/L	Trichloroethene (Trichloroethylene)
1.0 U	UG/L	Benzene
1.0 U	UG/L	Dibromochloromethane
1.0 U	UG/L	1,1,2-Trichloroethane

RESULTS	UNITS	ANALYTE
1.0 U	UG/L	cis-1,3-Dichloropropene
1.0 U	UG/L	Bromoform
1.0 U	UG/L	Bromobenzene
1.0 U	UG/L	1,1,2,2-Tetrachloroethane
1.0 U	UG/L	Tetrachloroethene (Tetrachloroethylene)
1.0 U	UG/L	1,3-Dichloropropane
2.0 U	UG/L	Methyl Butyl Ketone
1.0 U	UG/L	Toluene
1.0 U	UG/L	Chlorobenzene
1.0 U	UG/L	1,1,1,2-Tetrachloroethane
1.0 U	UG/L	Ethyl Benzene
2.0 U	UG/L	(m- and/or p-)Xylene
1.0 U	UG/L	o-Xylene
1.0 U	UG/L	Styrene
1.0 U	UG/L	1,2,3-Trichloropropane
1.0 U	UG/L	o-Chlorotoluene
1.0 U	UG/L	p-Chlorotoluene
1.0 U	UG/L	1,3-Dichlorobenzene
1.0 U	UG/L	1,4-Dichlorobenzene
1.0 U	UG/L	1,2-Dichlorobenzene
1.0 U	UG/L	1,2-Dibromoethane (EDB)
1.0 U	UG/L	Isopropylbenzene
1.0 U	UG/L	n-Propylbenzene
1.0 U	UG/L	1,3,5-Trimethylbenzene
1.0 U	UG/L	tert-Butylbenzene
1.0 U	UG/L	1,2,4-Trimethylbenzene
1.0 U	UG/L	sec-Butylbenzene
1.0 U	UG/L	p-Isopropyltoluene
1.0 U	UG/L	n-Butylbenzene
2.0 U	UG/L	1,2-Dibromo-3-Chloropropane (DBCP)
1.0 U	UG/L	1,2,4-Trichlorobenzene
1.0 UJ	UG/L	Hexachloro-1,3-Butadiene
1.0 U	UG/L	1,2,3-Trichlorobenzene

Bromomethane J-qualified due to low recovery in CCV
J-qualified compound values less than 1.0 are >MDL but <MQL

Hexachlorobutadiene % recovery was low in LCSD.

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

VOLATILES SAMPLE ANALYSIS

EPA - REGION IV SESD, ATHENS, GA

Production Date: 09/26/2005 10:48

Sample **7835** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0003 / NMW-2

Media: GROUNDWATER

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/09/2005 12:25

Ending:

RESULTS	UNITS	ANALYTE
1.0 U	UG/L	Dichlorodifluoromethane
1.0 U	UG/L	Chloromethane
1.0 U	UG/L	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
1.0 U	UG/L	Methyl T-Butyl Ether (MTBE)
1.0 UJ	UG/L	Bromomethane
1.0 U	UG/L	Cyclohexane
1.0 U	UG/L	Vinyl Chloride
1.0 U	UG/L	Chloroethane
1.0 U	UG/L	Trichlorofluoromethane (Freon 11)
0.43 AJ	UG/L	1,1-Dichloroethene (1,1-Dichloroethylene)
1.0 U	UG/L	Methylene Chloride
2.0 U	UG/L	Acetone
1.0 U	UG/L	Carbon Disulfide
1.0 U	UG/L	Methyl Acetate
5.2 A	UG/L	1,1-Dichloroethane
1.0 U	UG/L	cis-1,2-Dichloroethene
1.0 U	UG/L	2,2-Dichloropropane
5.0 U	UG/L	Methyl Ethyl Ketone
1.0 U	UG/L	Bromochloromethane
1.0 U	UG/L	trans-1,2-Dichloroethene
1.0 U	UG/L	Chloroform
1.0 U	UG/L	1,2-Dichloroethane
1.0 U	UG/L	1,1,1-Trichloroethane
1.0 U	UG/L	1,1-Dichloropropene
1.0 U	UG/L	Carbon Tetrachloride
1.0 U	UG/L	Bromodichloromethane
1.0 U	UG/L	Methyl Isobutyl Ketone
1.0 U	UG/L	1,2-Dichloropropane
1.0 U	UG/L	Methylcyclohexane
1.0 U	UG/L	Dibromomethane
1.0 U	UG/L	trans-1,3-Dichloropropene
1.0 U	UG/L	Trichloroethene (Trichloroethylene)
0.075 AJ	UG/L	Benzene
1.0 U	UG/L	Dibromochloromethane
1.0 U	UG/L	1,1,2-Trichloroethane

RESULTS	UNITS	ANALYTE
1.0 U	UG/L	cis-1,3-Dichloropropene
1.0 U	UG/L	Bromoform
1.0 U	UG/L	Bromobenzene
1.0 U	UG/L	1,1,2,2-Tetrachloroethane
1.0 U	UG/L	Tetrachloroethene (Tetrachloroethylene)
1.0 U	UG/L	1,3-Dichloropropane
2.0 U	UG/L	Methyl Butyl Ketone
1.0 U	UG/L	Toluene
0.13 AJ	UG/L	Chlorobenzene
1.0 U	UG/L	1,1,1,2-Tetrachloroethane
1.0 U	UG/L	Ethyl Benzene
2.0 U	UG/L	(m- and/or p-)Xylene
1.0 U	UG/L	o-Xylene
1.0 U	UG/L	Styrene
1.0 U	UG/L	1,2,3-Trichloropropane
1.0 U	UG/L	o-Chlorotoluene
1.0 U	UG/L	p-Chlorotoluene
1.0 U	UG/L	1,3-Dichlorobenzene
1.0 U	UG/L	1,4-Dichlorobenzene
1.0 U	UG/L	1,2-Dichlorobenzene
1.0 U	UG/L	1,2-Dibromoethane (EDB)
1.0 U	UG/L	Isopropylbenzene
1.0 U	UG/L	n-Propylbenzene
1.0 U	UG/L	1,3,5-Trimethylbenzene
1.0 U	UG/L	tert-Butylbenzene
1.0 U	UG/L	1,2,4-Trimethylbenzene
1.0 U	UG/L	sec-Butylbenzene
1.0 U	UG/L	p-Isopropyltoluene
1.0 U	UG/L	n-Butylbenzene
2.0 U	UG/L	1,2-Dibromo-3-Chloropropane (DBCP)
1.0 U	UG/L	1,2,4-Trichlorobenzene
1.0 UJ	UG/L	Hexachloro-1,3-Butadiene
1.0 U	UG/L	1,2,3-Trichlorobenzene

Bromomethane J-qualified due to low recovery in CCV
J-qualified compound values less than 1.0 are >MDL but <MQL

Hexachlorobutadiene % recovery was low in LCSD.

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

VOLATILES SAMPLE ANALYSIS **EPA - REGION IV SESD, ATHENS, GA** **Production Date: 09/26/2005 10:48**

Sample **7836** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0004 / NMW-3

Media: GROUNDWATER

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/09/2005 10:10

Ending:

RESULTS	UNITS	ANALYTE
20 U	UG/L	Dichlorodifluoromethane
20 U	UG/L	Chloromethane
20 U	UG/L	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
1.8 J	UG/L	Methyl T-Butyl Ether (MTBE)
20 UJ	UG/L	Bromomethane
20 U	UG/L	Cyclohexane
20 U	UG/L	Vinyl Chloride
20 U	UG/L	Chloroethane
20 U	UG/L	Trichlorofluoromethane (Freon 11)
20 U	UG/L	1,1-Dichloroethene (1,1-Dichloroethylene)
20 U	UG/L	Methylene Chloride
40 U	UG/L	Acetone
20 U	UG/L	Carbon Disulfide
20 U	UG/L	Methyl Acetate
3.2 J	UG/L	1,1-Dichloroethane
1500	UG/L	cis-1,2-Dichloroethene
20 U	UG/L	2,2-Dichloropropane
100 U	UG/L	Methyl Ethyl Ketone
20 U	UG/L	Bromochloromethane
20	UG/L	trans-1,2-Dichloroethene
20 U	UG/L	Chloroform
20 U	UG/L	1,2-Dichloroethane
20 U	UG/L	1,1,1-Trichloroethane
20 U	UG/L	1,1-Dichloropropene
20 U	UG/L	Carbon Tetrachloride
20 U	UG/L	Bromodichloromethane
20 U	UG/L	Methyl Isobutyl Ketone
20 U	UG/L	1,2-Dichloropropane
20 U	UG/L	Methylcyclohexane
20 U	UG/L	Dibromomethane
20 U	UG/L	trans-1,3-Dichloropropene
300	UG/L	Trichloroethene (Trichloroethylene)
20 U	UG/L	Benzene
20 U	UG/L	Dibromochloromethane
20 U	UG/L	1,1,2-Trichloroethane
20 U	UG/L	cis-1,3-Dichloropropene
20 U	UG/L	Bromoform
20 U	UG/L	Bromobenzene
20 U	UG/L	1,1,2,2-Tetrachloroethane
260	UG/L	Tetrachloroethene (Tetrachloroethylene)
20 U	UG/L	1,3-Dichloropropane
40 U	UG/L	Methyl Butyl Ketone
3.4 J	UG/L	Toluene
60 J	UG/L	Chlorobenzene
20 U	UG/L	1,1,1,2-Tetrachloroethane
20 U	UG/L	Ethyl Benzene
40 U	UG/L	(m- and/or p-)Xylene
20 U	UG/L	o-Xylene
20 U	UG/L	Styrene
20 U	UG/L	1,2,3-Trichloropropane
20 U	UG/L	o-Chlorotoluene
20 U	UG/L	p-Chlorotoluene
3.5 J	UG/L	1,3-Dichlorobenzene
16 J	UG/L	1,4-Dichlorobenzene
90	UG/L	1,2-Dichlorobenzene
20 U	UG/L	1,2-Dibromoethane (EDB)
20 U	UG/L	Isopropylbenzene
20 U	UG/L	n-Propylbenzene
20 U	UG/L	1,3,5-Trimethylbenzene
20 U	UG/L	tert-Butylbenzene
20 U	UG/L	1,2,4-Trimethylbenzene
20 U	UG/L	sec-Butylbenzene
20 U	UG/L	p-Isopropyltoluene
20 U	UG/L	n-Butylbenzene
40 U	UG/L	1,2-Dibromo-3-Chloropropane (DBCP)
20 U	UG/L	1,2,4-Trichlorobenzene
20 UJ	UG/L	Hexachloro-1,3-Butadiene
20 U	UG/L	1,2,3-Trichlorobenzene

Bromomethane J-qualified due to low recovery in CCV
J-qualified compound values less than 20 are >MDL but <MQL

Hexachlorobutadiene % recovery was low in LCSD.
Chlorobenzene J-qualified: % recovery high in the LCS/LCSD.

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

VOLATILES SAMPLE ANALYSIS | EPA - REGION IV SESD, ATHENS, GA | **Production Date: 09/26/2005 10:48**

Sample **7837** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0005 / NMW-4

Media: GROUNDWATER

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/09/2005 10:45

Ending:

RESULTS	UNITS	ANALYTE
20 U	UG/L	Dichlorodifluoromethane
20 U	UG/L	Chloromethane
20 U	UG/L	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
12 J	UG/L	Methyl T-Butyl Ether (MTBE)
20 UJ	UG/L	Bromomethane
20 U	UG/L	Cyclohexane
20 U	UG/L	Vinyl Chloride
20 U	UG/L	Chloroethane
20 U	UG/L	Trichlorofluoromethane (Freon 11)
20 U	UG/L	1,1-Dichloroethene (1,1-Dichloroethylene)
20 U	UG/L	Methylene Chloride
40 U	UG/L	Acetone
20 U	UG/L	Carbon Disulfide
20 U	UG/L	Methyl Acetate
20 U	UG/L	1,1-Dichloroethane
2100	UG/L	cis-1,2-Dichloroethene
20 U	UG/L	2,2-Dichloropropane
100 U	UG/L	Methyl Ethyl Ketone
20 U	UG/L	Bromochloromethane
28	UG/L	trans-1,2-Dichloroethene
20 U	UG/L	Chloroform
20 U	UG/L	1,2-Dichloroethane
20 U	UG/L	1,1,1-Trichloroethane
20 U	UG/L	1,1-Dichloropropene
20 U	UG/L	Carbon Tetrachloride
20 U	UG/L	Bromodichloromethane
20 U	UG/L	Methyl Isobutyl Ketone
20 U	UG/L	1,2-Dichloropropane
20 U	UG/L	Methylcyclohexane
20 U	UG/L	Dibromomethane
20 U	UG/L	trans-1,3-Dichloropropene
180	UG/L	Trichloroethene (Trichloroethylene)
20 U	UG/L	Benzene
20 U	UG/L	Dibromochloromethane
20 U	UG/L	1,1,2-Trichloroethane

RESULTS	UNITS	ANALYTE
20 U	UG/L	cis-1,3-Dichloropropene
20 U	UG/L	Bromoform
20 U	UG/L	Bromobenzene
20 U	UG/L	1,1,2,2-Tetrachloroethane
170	UG/L	Tetrachloroethene (Tetrachloroethylene)
20 U	UG/L	1,3-Dichloropropane
40 U	UG/L	Methyl Butyl Ketone
2.7 J	UG/L	Toluene
260 J	UG/L	Chlorobenzene
20 U	UG/L	1,1,1,2-Tetrachloroethane
20 U	UG/L	Ethyl Benzene
40 U	UG/L	(m- and/or p-)Xylene
20 U	UG/L	o-Xylene
20 U	UG/L	Styrene
20 U	UG/L	1,2,3-Trichloropropane
20 U	UG/L	o-Chlorotoluene
20 U	UG/L	p-Chlorotoluene
9.8 J	UG/L	1,3-Dichlorobenzene
43	UG/L	1,4-Dichlorobenzene
180	UG/L	1,2-Dichlorobenzene
20 U	UG/L	1,2-Dibromoethane (EDB)
20 U	UG/L	Isopropylbenzene
20 U	UG/L	n-Propylbenzene
20 U	UG/L	1,3,5-Trimethylbenzene
20 U	UG/L	tert-Butylbenzene
20 U	UG/L	1,2,4-Trimethylbenzene
20 U	UG/L	sec-Butylbenzene
20 U	UG/L	p-Isopropyltoluene
20 U	UG/L	n-Butylbenzene
40 U	UG/L	1,2-Dibromo-3-Chloropropane (DBCP)
20 U	UG/L	1,2,4-Trichlorobenzene
20 UJ	UG/L	Hexachloro-1,3-Butadiene
20 U	UG/L	1,2,3-Trichlorobenzene

Bromomethane J-qualified due to low recovery in CCV
J-qualified compound values less than 20 are >MDL but <MQL

Hexachlorobutadiene % recovery was low in LCSD.
Chlorobenzene J-qualified: % recovery high in the LCS/LCSD.

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

VOLATILES SAMPLE ANALYSIS **EPA - REGION IV SESD, ATHENS, GA** **Production Date: 09/26/2005 10:48**

Sample **7838** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0006 / APW-SB01-6

Media: SUBSURFACE SOIL

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 09:00

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE	RESULTS	UNITS	ANALYTE
0.90 U	UG/KG	Dichlorodifluoromethane	0.90 U	UG/KG	cis-1,3-Dichloropropene
0.90 U	UG/KG	Chloromethane	4.5 U	UG/KG	Bromoform
0.90 U	UG/KG	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.90 U	UG/KG	Bromobenzene
0.90 U	UG/KG	Methyl T-Butyl Ether (MTBE)	0.90 U	UG/KG	1,1,2,2-Tetrachloroethane
0.90 U	UG/KG	Bromomethane	0.90 U	UG/KG	Tetrachloroethene (Tetrachloroethylene)
0.90 U	UG/KG	Cyclohexane	0.90 U	UG/KG	1,3-Dichloropropane
0.90 U	UG/KG	Vinyl Chloride	0.90 U	UG/KG	Methyl Butyl Ketone
0.90 U	UG/KG	Chloroethane	0.90 U	UG/KG	Toluene
0.90 U	UG/KG	Trichlorofluoromethane (Freon 11)	0.90 U	UG/KG	Chlorobenzene
0.90 U	UG/KG	1,1-Dichloroethene (1,1-Dichloroethylene)	0.90 U	UG/KG	1,1,1,2-Tetrachloroethane
0.90 U	UG/KG	Methylene Chloride	0.90 U	UG/KG	Ethyl Benzene
9.0 U	UG/KG	Acetone	1.8 U	UG/KG	(m- and/or p-)Xylene
0.90 U	UG/KG	Carbon Disulfide	0.90 U	UG/KG	o-Xylene
0.90 U	UG/KG	Methyl Acetate	0.90 U	UG/KG	Styrene
0.90 U	UG/KG	1,1-Dichloroethane	1.8 U	UG/KG	1,2,3-Trichloropropane
0.90 U	UG/KG	cis-1,2-Dichloroethene	0.90 U	UG/KG	o-Chlorotoluene
0.90 U	UG/KG	2,2-Dichloropropane	1.8 U	UG/KG	p-Chlorotoluene
1.8 U	UG/KG	Methyl Ethyl Ketone	1.8 U	UG/KG	1,3-Dichlorobenzene
0.90 U	UG/KG	Bromochloromethane	1.8 U	UG/KG	1,4-Dichlorobenzene
4.5 U	UG/KG	trans-1,2-Dichloroethene	0.90 U	UG/KG	1,2-Dichlorobenzene
0.90 U	UG/KG	Chloroform	0.90 U	UG/KG	1,2-Dibromoethane (EDB)
0.90 U	UG/KG	1,2-Dichloroethane	0.90 U	UG/KG	Isopropylbenzene
0.90 U	UG/KG	1,1,1-Trichloroethane	0.90 U	UG/KG	n-Propylbenzene
0.90 U	UG/KG	1,1-Dichloropropene	0.90 U	UG/KG	1,3,5-Trimethylbenzene
0.90 U	UG/KG	Carbon Tetrachloride	0.90 U	UG/KG	tert-Butylbenzene
0.90 U	UG/KG	Bromodichloromethane	0.90 U	UG/KG	1,2,4-Trimethylbenzene
0.90 U	UG/KG	Methyl Isobutyl Ketone	0.90 U	UG/KG	sec-Butylbenzene
0.90 U	UG/KG	1,2-Dichloropropane	0.90 U	UG/KG	p-Isopropyltoluene
0.90 U	UG/KG	Methylcyclohexane	1.8 U	UG/KG	n-Butylbenzene
0.90 U	UG/KG	Dibromomethane	4.5 U	UG/KG	1,2-Dibromo-3-Chloropropane (DBCP)
0.90 U	UG/KG	trans-1,3-Dichloropropene	1.8 U	UG/KG	1,2,4-Trichlorobenzene
0.90 U	UG/KG	Trichloroethene (Trichloroethylene)	0.90 U	UG/KG	Hexachloro-1,3-Butadiene
0.90 U	UG/KG	Benzene	1.8 U	UG/KG	1,2,3-Trichlorobenzene
0.90 U	UG/KG	Dibromochloromethane	12	%	% Moisture
0.90 U	UG/KG	1,1,2-Trichloroethane			

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

VOLATILES SAMPLE ANALYSIS — EPA - REGION IV SESD, ATHENS, GA — **Production Date: 09/26/2005 10:48**

Sample 7839 FY 2005 Project: 05-0790

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0007 / APQ-SS01-1

Media: SURFACE SOIL

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 08:20

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
1.1 U	UG/KG	Dichlorodifluoromethane
1.1 U	UG/KG	Chloromethane
1.1 U	UG/KG	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
1.1 U	UG/KG	Methyl T-Butyl Ether (MTBE)
1.1 U	UG/KG	Bromomethane
1.1 U	UG/KG	Cyclohexane
1.1 U	UG/KG	Vinyl Chloride
1.1 U	UG/KG	Chloroethane
0.24 J	UG/KG	Trichlorofluoromethane (Freon 11)
1.1 U	UG/KG	1,1-Dichloroethene (1,1-Dichloroethylene)
1.1 U	UG/KG	Methylene Chloride
440 J	UG/KG	Acetone
1.1 U	UG/KG	Carbon Disulfide
1.1 U	UG/KG	Methyl Acetate
1.1 U	UG/KG	1,1-Dichloroethane
1.1 U	UG/KG	cis-1,2-Dichloroethene
1.1 U	UG/KG	2,2-Dichloropropane
1.6 J	UG/KG	Methyl Ethyl Ketone
1.1 U	UG/KG	Bromochloromethane
5.4 U	UG/KG	trans-1,2-Dichloroethene
1.1 U	UG/KG	Chloroform
1.1 U	UG/KG	1,2-Dichloroethane
1.1 U	UG/KG	1,1,1-Trichloroethane
1.1 U	UG/KG	1,1-Dichloropropene
1.1 U	UG/KG	Carbon Tetrachloride
1.1 U	UG/KG	Bromodichloromethane
1.1 U	UG/KG	Methyl Isobutyl Ketone
1.1 U	UG/KG	1,2-Dichloropropane
1.1 U	UG/KG	Methylcyclohexane
1.1 U	UG/KG	Dibromomethane
1.1 U	UG/KG	trans-1,3-Dichloropropene
1.1 U	UG/KG	Trichloroethene (Trichloroethylene)
1.1 U	UG/KG	Benzene
1.1 U	UG/KG	Dibromochloromethane
1.1 U	UG/KG	1,1,2-Trichloroethane

RESULTS	UNITS	ANALYTE
1.1 U	UG/KG	cis-1,3-Dichloropropene
5.4 U	UG/KG	Bromoform
1.1 U	UG/KG	Bromobenzene
1.1 U	UG/KG	1,1,2,2-Tetrachloroethane
1.1 U	UG/KG	Tetrachloroethene (Tetrachloroethylene)
1.1 U	UG/KG	1,3-Dichloropropane
1.1 U	UG/KG	Methyl Butyl Ketone
1.1 U	UG/KG	Toluene
1.1 U	UG/KG	Chlorobenzene
1.1 U	UG/KG	1,1,1,2-Tetrachloroethane
1.1 U	UG/KG	Ethyl Benzene
2.2 U	UG/KG	(m- and/or p-)Xylene
1.1 U	UG/KG	o-Xylene
1.1 U	UG/KG	Styrene
2.2 U	UG/KG	1,2,3-Trichloropropane
1.1 U	UG/KG	o-Chlorotoluene
2.2 U	UG/KG	p-Chlorotoluene
2.2 U	UG/KG	1,3-Dichlorobenzene
2.2 U	UG/KG	1,4-Dichlorobenzene
1.1 U	UG/KG	1,2-Dichlorobenzene
1.1 U	UG/KG	1,2-Dibromoethane (EDB)
1.1 U	UG/KG	Isopropylbenzene
1.1 U	UG/KG	n-Propylbenzene
1.1 U	UG/KG	1,3,5-Trimethylbenzene
1.1 U	UG/KG	tert-Butylbenzene
1.1 U	UG/KG	1,2,4-Trimethylbenzene
1.1 U	UG/KG	sec-Butylbenzene
1.1 U	UG/KG	p-Isopropyltoluene
2.2 U	UG/KG	n-Butylbenzene
5.4 U	UG/KG	1,2-Dibromo-3-Chloropropane (DBCP)
2.2 U	UG/KG	1,2,4-Trichlorobenzene
1.1 U	UG/KG	Hexachloro-1,3-Butadiene
2.2 U	UG/KG	1,2,3-Trichlorobenzene
33	%	% Moisture

All results below the MQL, but above the MDL reported as J.
Acetone reported as J due to results above the calibration curve.

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Sample **7840** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0008 / APW-SS02-1

Media: SURFACE SOIL

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 08:30

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE	RESULTS	UNITS	ANALYTE
0.96 U	UG/KG	Dichlorodifluoromethane	0.96 U	UG/KG	cis-1,3-Dichloropropene
0.96 U	UG/KG	Chloromethane	4.8 U	UG/KG	Bromoform
0.96 U	UG/KG	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.96 U	UG/KG	Bromobenzene
0.96 U	UG/KG	Methyl T-Butyl Ether (MTBE)	0.96 U	UG/KG	1,1,2,2-Tetrachloroethane
0.96 U	UG/KG	Bromomethane	0.96 U	UG/KG	Tetrachloroethene (Tetrachloroethylene)
0.96 U	UG/KG	Cyclohexane	0.96 U	UG/KG	1,3-Dichloropropane
0.96 U	UG/KG	Vinyl Chloride	0.96 U	UG/KG	Methyl Butyl Ketone
0.96 U	UG/KG	Chloroethane	0.96 U	UG/KG	Toluene
0.96 U	UG/KG	Trichlorofluoromethane (Freon 11)	0.96 U	UG/KG	Chlorobenzene
0.96 U	UG/KG	1,1-Dichloroethene (1,1-Dichloroethylene)	0.96 U	UG/KG	1,1,1,2-Tetrachloroethane
0.96 U	UG/KG	Methylene Chloride	0.96 U	UG/KG	Ethyl Benzene
330 J	UG/KG	Acetone	1.9 U	UG/KG	(m- and/or p-)Xylene
0.55 J	UG/KG	Carbon Disulfide	0.17 J	UG/KG	o-Xylene
0.96 U	UG/KG	Methyl Acetate	0.96 U	UG/KG	Styrene
0.96 U	UG/KG	1,1-Dichloroethane	1.9 U	UG/KG	1,2,3-Trichloropropane
0.96 U	UG/KG	cis-1,2-Dichloroethene	0.96 U	UG/KG	o-Chlorotoluene
0.96 U	UG/KG	2,2-Dichloropropane	1.9 U	UG/KG	p-Chlorotoluene
3.8	UG/KG	Methyl Ethyl Ketone	1.9 U	UG/KG	1,3-Dichlorobenzene
0.96 U	UG/KG	Bromochloromethane	1.9 U	UG/KG	1,4-Dichlorobenzene
4.8 U	UG/KG	trans-1,2-Dichloroethene	0.96 U	UG/KG	1,2-Dichlorobenzene
0.96 U	UG/KG	Chloroform	0.96 U	UG/KG	1,2-Dibromoethane (EDB)
0.96 U	UG/KG	1,2-Dichloroethane	0.96 U	UG/KG	Isopropylbenzene
0.96 U	UG/KG	1,1,1-Trichloroethane	0.96 U	UG/KG	n-Propylbenzene
0.96 U	UG/KG	1,1-Dichloropropene	0.39 J	UG/KG	1,3,5-Trimethylbenzene
0.96 U	UG/KG	Carbon Tetrachloride	0.96 U	UG/KG	tert-Butylbenzene
0.96 U	UG/KG	Bromodichloromethane	0.96 U	UG/KG	1,2,4-Trimethylbenzene
0.96 U	UG/KG	Methyl Isobutyl Ketone	0.96 U	UG/KG	sec-Butylbenzene
0.96 U	UG/KG	1,2-Dichloropropane	0.96 U	UG/KG	p-Isopropyltoluene
0.96 U	UG/KG	Methylcyclohexane	1.9 U	UG/KG	n-Butylbenzene
0.96 U	UG/KG	Dibromomethane	4.8 U	UG/KG	1,2-Dibromo-3-Chloropropane (DBCP)
0.96 U	UG/KG	trans-1,3-Dichloropropene	1.9 U	UG/KG	1,2,4-Trichlorobenzene
0.96 U	UG/KG	Trichloroethene (Trichloroethylene)	0.96 U	UG/KG	Hexachloro-1,3-Butadiene
0.96 U	UG/KG	Benzene	1.9 U	UG/KG	1,2,3-Trichlorobenzene
0.96 U	UG/KG	Dibromochloromethane	25	%	% Moisture
0.96 U	UG/KG	1,1,2-Trichloroethane			

All results below the MQL, but above the MDL reported as J.
Acetone reported as J due to results above the calibration curve.

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Sample **7841** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0009 / APW-SS03-1

Media: SURFACE SOIL

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 08:35

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE	RESULTS	UNITS	ANALYTE
0.97 U	UG/KG	Dichlorodifluoromethane	0.97 U	UG/KG	cis-1,3-Dichloropropene
0.97 U	UG/KG	Chloromethane	4.9 U	UG/KG	Bromoform
0.97 U	UG/KG	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.97 U	UG/KG	Bromobenzene
0.97 U	UG/KG	Methyl T-Butyl Ether (MTBE)	0.97 U	UG/KG	1,1,2,2-Tetrachloroethane
0.97 U	UG/KG	Bromomethane	0.97 U	UG/KG	Tetrachloroethene (Tetrachloroethylene)
0.97 U	UG/KG	Cyclohexane	0.97 U	UG/KG	1,3-Dichloropropane
0.97 U	UG/KG	Vinyl Chloride	0.97 U	UG/KG	Methyl Butyl Ketone
0.97 U	UG/KG	Chloroethane	0.97 U	UG/KG	Toluene
0.97 U	UG/KG	Trichlorofluoromethane (Freon 11)	0.97 U	UG/KG	Chlorobenzene
0.97 U	UG/KG	1,1-Dichloroethene (1,1-Dichloroethylene)	0.97 U	UG/KG	1,1,1,2-Tetrachloroethane
0.97 U	UG/KG	Methylene Chloride	0.97 U	UG/KG	Ethyl Benzene
9.7 U	UG/KG	Acetone	1.9 U	UG/KG	(m- and/or p-)Xylene
0.97 U	UG/KG	Carbon Disulfide	0.97 U	UG/KG	o-Xylene
0.97 U	UG/KG	Methyl Acetate	0.97 U	UG/KG	Styrene
0.97 U	UG/KG	1,1-Dichloroethane	1.9 U	UG/KG	1,2,3-Trichloropropane
0.97 U	UG/KG	cis-1,2-Dichloroethene	0.97 U	UG/KG	o-Chlorotoluene
0.97 U	UG/KG	2,2-Dichloropropane	1.9 U	UG/KG	p-Chlorotoluene
1.9 U	UG/KG	Methyl Ethyl Ketone	1.9 U	UG/KG	1,3-Dichlorobenzene
0.97 U	UG/KG	Bromochloromethane	1.9 U	UG/KG	1,4-Dichlorobenzene
4.9 U	UG/KG	trans-1,2-Dichloroethene	0.97 U	UG/KG	1,2-Dichlorobenzene
0.97 U	UG/KG	Chloroform	0.97 U	UG/KG	1,2-Dibromoethane (EDB)
0.97 U	UG/KG	1,2-Dichloroethane	0.97 U	UG/KG	Isopropylbenzene
0.97 U	UG/KG	1,1,1-Trichloroethane	0.97 U	UG/KG	n-Propylbenzene
0.97 U	UG/KG	1,1-Dichloropropene	0.97 U	UG/KG	1,3,5-Trimethylbenzene
0.97 U	UG/KG	Carbon Tetrachloride	0.97 U	UG/KG	tert-Butylbenzene
0.97 U	UG/KG	Bromodichloromethane	0.97 U	UG/KG	1,2,4-Trimethylbenzene
0.97 U	UG/KG	Methyl Isobutyl Ketone	0.97 U	UG/KG	sec-Butylbenzene
0.97 U	UG/KG	1,2-Dichloropropane	0.97 U	UG/KG	p-Isopropyltoluene
0.97 U	UG/KG	Methylcyclohexane	1.9 U	UG/KG	n-Butylbenzene
0.97 U	UG/KG	Dibromomethane	4.9 U	UG/KG	1,2-Dibromo-3-Chloropropane (DBCP)
0.97 U	UG/KG	trans-1,3-Dichloropropene	1.9 U	UG/KG	1,2,4-Trichlorobenzene
0.97 U	UG/KG	Trichloroethene (Trichloroethylene)	0.97 U	UG/KG	Hexachloro-1,3-Butadiene
0.97 U	UG/KG	Benzene	1.9 U	UG/KG	1,2,3-Trichlorobenzene
0.97 U	UG/KG	Dibromochloromethane	11	%	% Moisture
0.97 U	UG/KG	1,1,2-Trichloroethane			

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

VOLATILES SAMPLE ANALYSIS | **EPA - REGION IV SESD, ATHENS, GA** | **Production Date: 09/26/2005 10:48**

Sample **7842** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0010 / APW-SED-1

Media: SEDIMENT

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 09:20

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
1.2 U	UG/KG	Dichlorodifluoromethane
1.2 U	UG/KG	Chloromethane
1.2 U	UG/KG	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
1.2 U	UG/KG	Methyl T-Butyl Ether (MTBE)
1.2 U	UG/KG	Bromomethane
1.2 U	UG/KG	Cyclohexane
1.2 U	UG/KG	Vinyl Chloride
1.2 U	UG/KG	Chloroethane
1.2 U	UG/KG	Trichlorofluoromethane (Freon 11)
1.2 U	UG/KG	1,1-Dichloroethene (1,1-Dichloroethylene)
1.2 U	UG/KG	Methylene Chloride
20 U	UG/KG	Acetone
0.83 J	UG/KG	Carbon Disulfide
1.2 U	UG/KG	Methyl Acetate
1.2 U	UG/KG	1,1-Dichloroethane
1.2 U	UG/KG	cis-1,2-Dichloroethene
1.2 U	UG/KG	2,2-Dichloropropane
4.3	UG/KG	Methyl Ethyl Ketone
1.2 U	UG/KG	Bromochloromethane
6.1 U	UG/KG	trans-1,2-Dichloroethene
1.2 U	UG/KG	Chloroform
1.2 U	UG/KG	1,2-Dichloroethane
1.2 U	UG/KG	1,1,1-Trichloroethane
1.2 U	UG/KG	1,1-Dichloropropene
1.2 U	UG/KG	Carbon Tetrachloride
1.2 U	UG/KG	Bromodichloromethane
1.2 U	UG/KG	Methyl Isobutyl Ketone
1.2 U	UG/KG	1,2-Dichloropropane
1.2 U	UG/KG	Methylcyclohexane
1.2 U	UG/KG	Dibromomethane
1.2 U	UG/KG	trans-1,3-Dichloropropene
1.2 U	UG/KG	Trichloroethene (Trichloroethylene)
1.2 U	UG/KG	Benzene
1.2 U	UG/KG	Dibromochloromethane
1.2 U	UG/KG	1,1,2-Trichloroethane
1.2 U	UG/KG	cis-1,3-Dichloropropene
6.1 U	UG/KG	Bromoform
1.2 U	UG/KG	Bromobenzene
1.2 U	UG/KG	1,1,2,2-Tetrachloroethane
1.2 U	UG/KG	Tetrachloroethene (Tetrachloroethylene)
1.2 U	UG/KG	1,3-Dichloropropane
1.2 U	UG/KG	Methyl Butyl Ketone
1.2 U	UG/KG	Toluene
1.2 U	UG/KG	Chlorobenzene
1.2 U	UG/KG	1,1,1,2-Tetrachloroethane
1.2 U	UG/KG	Ethyl Benzene
1.2 U	UG/KG	(m- and/or p-)Xylene
1.2 U	UG/KG	o-Xylene
1.2 U	UG/KG	Styrene
2.4 U	UG/KG	1,2,3-Trichloropropane
1.2 U	UG/KG	o-Chlorotoluene
2.4 U	UG/KG	p-Chlorotoluene
2.4 U	UG/KG	1,3-Dichlorobenzene
2.4 U	UG/KG	1,4-Dichlorobenzene
1.2 U	UG/KG	1,2-Dichlorobenzene
1.2 U	UG/KG	1,2-Dibromoethane (EDB)
1.2 U	UG/KG	Isopropylbenzene
1.2 U	UG/KG	n-Propylbenzene
1.2 U	UG/KG	1,3,5-Trimethylbenzene
1.2 U	UG/KG	tert-Butylbenzene
1.2 U	UG/KG	1,2,4-Trimethylbenzene
1.2 U	UG/KG	sec-Butylbenzene
0.50 J	UG/KG	p-Isopropyltoluene
2.4 U	UG/KG	n-Butylbenzene
6.1 U	UG/KG	1,2-Dibromo-3-Chloropropane (DBCP)
2.4 U	UG/KG	1,2,4-Trichlorobenzene
1.2 U	UG/KG	Hexachloro-1,3-Butadiene
2.4 U	UG/KG	1,2,3-Trichlorobenzene
37	%	% Moisture

All results below the MQL, but above the MDL reported as J.

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

VOLATILES SAMPLE ANALYSIS | EPA - REGION IV SESD, ATHENS, GA | **Production Date: 09/26/2005 10:48**

Sample **7843** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0011 / APW-SED-2

Media: SEDIMENT

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 09:35

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
1.4 U	UG/KG	Dichlorodifluoromethane
1.4 U	UG/KG	Chloromethane
1.4 U	UG/KG	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
1.4 U	UG/KG	Methyl T-Butyl Ether (MTBE)
1.4 U	UG/KG	Bromomethane
1.4 U	UG/KG	Cyclohexane
1.4 U	UG/KG	Vinyl Chloride
1.4 U	UG/KG	Chloroethane
1.4 U	UG/KG	Trichlorofluoromethane (Freon 11)
1.4 U	UG/KG	1,1-Dichloroethene (1,1-Dichloroethylene)
1.4 U	UG/KG	Methylene Chloride
14 U	UG/KG	Acetone
1.1 J	UG/KG	Carbon Disulfide
1.4 U	UG/KG	Methyl Acetate
1.4 U	UG/KG	1,1-Dichloroethane
1.4 U	UG/KG	cis-1,2-Dichloroethene
1.4 U	UG/KG	2,2-Dichloropropane
1.3 J	UG/KG	Methyl Ethyl Ketone
1.4 U	UG/KG	Bromochloromethane
7.0 U	UG/KG	trans-1,2-Dichloroethene
1.4 U	UG/KG	Chloroform
1.4 U	UG/KG	1,2-Dichloroethane
1.4 U	UG/KG	1,1,1-Trichloroethane
1.4 U	UG/KG	1,1-Dichloropropene
1.4 U	UG/KG	Carbon Tetrachloride
1.4 U	UG/KG	Bromodichloromethane
1.4 U	UG/KG	Methyl Isobutyl Ketone
1.4 U	UG/KG	1,2-Dichloropropane
1.4 U	UG/KG	Methylcyclohexane
1.4 U	UG/KG	Dibromomethane
1.4 U	UG/KG	trans-1,3-Dichloropropene
1.4 U	UG/KG	Trichloroethene (Trichloroethylene)
1.4 U	UG/KG	Benzene
1.4 U	UG/KG	Dibromochloromethane
1.4 U	UG/KG	1,1,2-Trichloroethane
1.4 U	UG/KG	cis-1,3-Dichloropropene
7.0 U	UG/KG	Bromoform
1.4 U	UG/KG	Bromobenzene
1.4 U	UG/KG	1,1,2,2-Tetrachloroethane
1.4 U	UG/KG	Tetrachloroethene (Tetrachloroethylene)
1.4 U	UG/KG	1,3-Dichloropropane
1.4 U	UG/KG	Methyl Butyl Ketone
1.4 U	UG/KG	Toluene
1.4 U	UG/KG	Chlorobenzene
1.4 U	UG/KG	1,1,1,2-Tetrachloroethane
1.4 U	UG/KG	Ethyl Benzene
2.8 U	UG/KG	(m- and/or p-)Xylene
1.4 U	UG/KG	o-Xylene
1.4 U	UG/KG	Styrene
2.8 U	UG/KG	1,2,3-Trichloropropane
1.4 U	UG/KG	o-Chlorotoluene
2.8 U	UG/KG	p-Chlorotoluene
2.8 U	UG/KG	1,3-Dichlorobenzene
2.8 U	UG/KG	1,4-Dichlorobenzene
1.4 U	UG/KG	1,2-Dichlorobenzene
1.4 U	UG/KG	1,2-Dibromoethane (EDB)
1.4 U	UG/KG	Isopropylbenzene
1.4 U	UG/KG	n-Propylbenzene
1.4 U	UG/KG	1,3,5-Trimethylbenzene
1.4 U	UG/KG	tert-Butylbenzene
1.4 U	UG/KG	1,2,4-Trimethylbenzene
1.4 U	UG/KG	sec-Butylbenzene
1.4 U	UG/KG	p-Isopropyltoluene
2.8 U	UG/KG	n-Butylbenzene
7.0 U	UG/KG	1,2-Dibromo-3-Chloropropane (DBCP)
2.8 U	UG/KG	1,2,4-Trichlorobenzene
1.4 U	UG/KG	Hexachloro-1,3-Butadiene
2.8 U	UG/KG	1,2,3-Trichlorobenzene
44	%	% Moisture

All results below the MQL, but above the MDL reported as J.

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

VOLATILES SAMPLE ANALYSIS | EPA - REGION IV SESD, ATHENS, GA | **Production Date: 09/26/2005 10:48**

Sample **7844** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0012 / APW-SED-3

Media: SEDIMENT

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 09:40

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
1.1 U	UG/KG	Dichlorodifluoromethane
1.1 U	UG/KG	Chloromethane
1.1 U	UG/KG	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
1.1 U	UG/KG	Methyl T-Butyl Ether (MTBE)
1.1 U	UG/KG	Bromomethane
1.1 U	UG/KG	Cyclohexane
1.1 U	UG/KG	Vinyl Chloride
1.1 U	UG/KG	Chloroethane
1.1 U	UG/KG	Trichlorofluoromethane (Freon 11)
1.1 U	UG/KG	1,1-Dichloroethene (1,1-Dichloroethylene)
1.1 U	UG/KG	Methylene Chloride
11 U	UG/KG	Acetone
1.1 U	UG/KG	Carbon Disulfide
1.1 U	UG/KG	Methyl Acetate
1.1 U	UG/KG	1,1-Dichloroethane
1.1 U	UG/KG	cis-1,2-Dichloroethene
1.1 U	UG/KG	2,2-Dichloropropane
2.1 U	UG/KG	Methyl Ethyl Ketone
1.1 U	UG/KG	Bromochloromethane
5.3 U	UG/KG	trans-1,2-Dichloroethene
1.1 U	UG/KG	Chloroform
1.1 U	UG/KG	1,2-Dichloroethane
1.1 U	UG/KG	1,1,1-Trichloroethane
1.1 U	UG/KG	1,1-Dichloropropene
1.1 U	UG/KG	Carbon Tetrachloride
1.1 U	UG/KG	Bromodichloromethane
1.1 U	UG/KG	Methyl Isobutyl Ketone
1.1 U	UG/KG	1,2-Dichloropropane
1.1 U	UG/KG	Methylcyclohexane
1.1 U	UG/KG	Dibromomethane
1.1 U	UG/KG	trans-1,3-Dichloropropene
1.1 U	UG/KG	Trichloroethene (Trichloroethylene)
1.1 U	UG/KG	Benzene
1.1 U	UG/KG	Dibromochloromethane
1.1 U	UG/KG	1,1,2-Trichloroethane

RESULTS	UNITS	ANALYTE
1.1 U	UG/KG	cis-1,3-Dichloropropene
5.3 U	UG/KG	Bromoform
1.1 U	UG/KG	Bromobenzene
1.1 U	UG/KG	1,1,2,2-Tetrachloroethane
1.1 U	UG/KG	Tetrachloroethene (Tetrachloroethylene)
1.1 U	UG/KG	1,3-Dichloropropane
1.1 U	UG/KG	Methyl Butyl Ketone
1.1 U	UG/KG	Toluene
1.1 U	UG/KG	Chlorobenzene
1.1 U	UG/KG	1,1,1,2-Tetrachloroethane
1.1 U	UG/KG	Ethyl Benzene
2.1 U	UG/KG	(m- and/or p-)Xylene
1.1 U	UG/KG	o-Xylene
1.1 U	UG/KG	Styrene
2.1 U	UG/KG	1,2,3-Trichloropropane
1.1 U	UG/KG	o-Chlorotoluene
2.1 U	UG/KG	p-Chlorotoluene
2.1 U	UG/KG	1,3-Dichlorobenzene
2.1 U	UG/KG	1,4-Dichlorobenzene
1.1 U	UG/KG	1,2-Dichlorobenzene
1.1 U	UG/KG	1,2-Dibromoethane (EDB)
1.1 U	UG/KG	Isopropylbenzene
1.1 U	UG/KG	n-Propylbenzene
1.1 U	UG/KG	1,3,5-Trimethylbenzene
1.1 U	UG/KG	tert-Butylbenzene
1.1 U	UG/KG	1,2,4-Trimethylbenzene
1.1 U	UG/KG	sec-Butylbenzene
1.1 U	UG/KG	p-Isopropyltoluene
2.1 U	UG/KG	n-Butylbenzene
5.3 U	UG/KG	1,2-Dibromo-3-Chloropropane (DBCP)
2.1 U	UG/KG	1,2,4-Trichlorobenzene
1.1 U	UG/KG	Hexachloro-1,3-Butadiene
2.1 U	UG/KG	1,2,3-Trichlorobenzene
33	%	% Moisture

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

VOLATILES SAMPLE ANALYSIS | EPA - REGION IV SESD, ATHENS, GA | **Production Date: 09/26/2005 10:48**

Sample **7845** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0013 / APW-SED-4

Media: SEDIMENT

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 09:45

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
1.0 U	UG/KG	Dichlorodifluoromethane
1.0 U	UG/KG	Chloromethane
1.0 U	UG/KG	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
1.0 U	UG/KG	Methyl T-Butyl Ether (MTBE)
1.0 U	UG/KG	Bromomethane
1.0 U	UG/KG	Cyclohexane
1.0 U	UG/KG	Vinyl Chloride
1.0 U	UG/KG	Chloroethane
1.0 U	UG/KG	Trichlorofluoromethane (Freon 11)
1.0 U	UG/KG	1,1-Dichloroethene (1,1-Dichloroethylene)
1.0 U	UG/KG	Methylene Chloride
10 U	UG/KG	Acetone
1.0 U	UG/KG	Carbon Disulfide
1.0 U	UG/KG	Methyl Acetate
1.0 U	UG/KG	1,1-Dichloroethane
1.0 U	UG/KG	cis-1,2-Dichloroethene
1.0 U	UG/KG	2,2-Dichloropropane
2.0 U	UG/KG	Methyl Ethyl Ketone
1.0 U	UG/KG	Bromochloromethane
5.0 U	UG/KG	trans-1,2-Dichloroethene
1.0 U	UG/KG	Chloroform
1.0 U	UG/KG	1,2-Dichloroethane
1.0 U	UG/KG	1,1,1-Trichloroethane
1.0 U	UG/KG	1,1-Dichloropropene
1.0 U	UG/KG	Carbon Tetrachloride
1.0 U	UG/KG	Bromodichloromethane
1.0 U	UG/KG	Methyl Isobutyl Ketone
1.0 U	UG/KG	1,2-Dichloropropane
1.0 U	UG/KG	Methylcyclohexane
1.0 U	UG/KG	Dibromomethane
1.0 U	UG/KG	trans-1,3-Dichloropropene
1.0 U	UG/KG	Trichloroethene (Trichloroethylene)
1.0 U	UG/KG	Benzene
1.0 U	UG/KG	Dibromochloromethane
1.0 U	UG/KG	1,1,2-Trichloroethane

RESULTS	UNITS	ANALYTE
1.0 U	UG/KG	cis-1,3-Dichloropropene
5.0 U	UG/KG	Bromoform
1.0 U	UG/KG	Bromobenzene
1.0 U	UG/KG	1,1,2,2-Tetrachloroethane
1.0 U	UG/KG	Tetrachloroethene (Tetrachloroethylene)
1.0 U	UG/KG	1,3-Dichloropropane
1.0 U	UG/KG	Methyl Butyl Ketone
1.0 U	UG/KG	Toluene
1.0 U	UG/KG	Chlorobenzene
1.0 U	UG/KG	1,1,1,2-Tetrachloroethane
1.0 U	UG/KG	Ethyl Benzene
2.0 U	UG/KG	(m- and/or p-)Xylene
1.0 U	UG/KG	o-Xylene
1.0 U	UG/KG	Styrene
2.0 U	UG/KG	1,2,3-Trichloropropane
1.0 U	UG/KG	o-Chlorotoluene
2.0 U	UG/KG	p-Chlorotoluene
2.0 U	UG/KG	1,3-Dichlorobenzene
2.0 U	UG/KG	1,4-Dichlorobenzene
1.0 U	UG/KG	1,2-Dichlorobenzene
1.0 U	UG/KG	1,2-Dibromoethane (EDB)
1.0 U	UG/KG	Isopropylbenzene
1.0 U	UG/KG	n-Propylbenzene
1.0 U	UG/KG	1,3,5-Trimethylbenzene
1.0 U	UG/KG	tert-Butylbenzene
1.0 U	UG/KG	1,2,4-Trimethylbenzene
1.0 U	UG/KG	sec-Butylbenzene
1.0 U	UG/KG	p-Isopropyltoluene
2.0 U	UG/KG	n-Butylbenzene
5.0 U	UG/KG	1,2-Dibromo-3-Chloropropane (DBCP)
2.0 U	UG/KG	1,2,4-Trichlorobenzene
1.0 U	UG/KG	Hexachloro-1,3-Butadiene
2.0 U	UG/KG	1,2,3-Trichlorobenzene
26	%	% Moisture

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Sample 7846 FY 2005 Project: 05-0790

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL

Program: SF

Id/Station: D0014 / APW-SED-5

Media: SEDIMENT

Produced by: Hale, Sallie

Requestor:

Project Leader: WJOYNER

Beginning: 08/10/2005 09:50

Ending:

DATA REPORTED ON DRY WEIGHT BASIS

RESULTS	UNITS	ANALYTE
1.1 U	UG/KG	Dichlorodifluoromethane
1.1 U	UG/KG	Chloromethane
1.1 U	UG/KG	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
1.1 U	UG/KG	Methyl T-Butyl Ether (MTBE)
1.1 U	UG/KG	Bromomethane
1.1 U	UG/KG	Cyclohexane
1.1 U	UG/KG	Vinyl Chloride
1.1 U	UG/KG	Chloroethane
1.1 U	UG/KG	Trichlorofluoromethane (Freon 11)
1.1 U	UG/KG	1,1-Dichloroethene (1,1-Dichloroethylene)
1.1 U	UG/KG	Methylene Chloride
11 U	UG/KG	Acetone
1.1 U	UG/KG	Carbon Disulfide
1.1 U	UG/KG	Methyl Acetate
1.1 U	UG/KG	1,1-Dichloroethane
1.1 U	UG/KG	cis-1,2-Dichloroethene
1.1 U	UG/KG	2,2-Dichloropropane
2.2 U	UG/KG	Methyl Ethyl Ketone
1.1 U	UG/KG	Bromochloromethane
5.6 U	UG/KG	trans-1,2-Dichloroethene
1.1 U	UG/KG	Chloroform
1.1 U	UG/KG	1,2-Dichloroethane
1.1 U	UG/KG	1,1,1-Trichloroethane
1.1 U	UG/KG	1,1-Dichloropropene
1.1 U	UG/KG	Carbon Tetrachloride
1.1 U	UG/KG	Bromodichloromethane
1.1 U	UG/KG	Methyl Isobutyl Ketone
1.1 U	UG/KG	1,2-Dichloropropane
1.1 U	UG/KG	Methylcyclohexane
1.1 U	UG/KG	Dibromomethane
1.1 U	UG/KG	trans-1,3-Dichloropropene
1.1 U	UG/KG	Trichloroethene (Trichloroethylene)
1.1 U	UG/KG	Benzene
1.1 U	UG/KG	Dibromochloromethane
1.1 U	UG/KG	1,1,2-Trichloroethane

RESULTS	UNITS	ANALYTE
1.1 U	UG/KG	cis-1,3-Dichloropropene
5.6 U	UG/KG	Bromoform
1.1 U	UG/KG	Bromobenzene
1.1 U	UG/KG	1,1,2,2-Tetrachloroethane
1.1 U	UG/KG	Tetrachloroethene (Tetrachloroethylene)
1.1 U	UG/KG	1,3-Dichloropropane
1.1 U	UG/KG	Methyl Butyl Ketone
1.1 U	UG/KG	Toluene
1.1 U	UG/KG	Chlorobenzene
1.1 U	UG/KG	1,1,1,2-Tetrachloroethane
1.1 U	UG/KG	Ethyl Benzene
2.2 U	UG/KG	(m- and/or p-)Xylene
1.1 U	UG/KG	o-Xylene
1.1 U	UG/KG	Styrene
2.2 U	UG/KG	1,2,3-Trichloropropane
1.1 U	UG/KG	o-Chlorotoluene
2.2 U	UG/KG	p-Chlorotoluene
2.2 U	UG/KG	1,3-Dichlorobenzene
2.2 U	UG/KG	1,4-Dichlorobenzene
1.1 U	UG/KG	1,2-Dichlorobenzene
1.1 U	UG/KG	1,2-Dibromoethane (EDB)
1.1 U	UG/KG	Isopropylbenzene
1.1 U	UG/KG	n-Propylbenzene
1.1 U	UG/KG	1,3,5-Trimethylbenzene
1.1 U	UG/KG	tert-Butylbenzene
1.1 U	UG/KG	1,2,4-Trimethylbenzene
1.1 U	UG/KG	sec-Butylbenzene
1.1 U	UG/KG	p-Isopropyltoluene
2.2 U	UG/KG	n-Butylbenzene
5.6 U	UG/KG	1,2-Dibromo-3-Chloropropane (DBCP)
2.2 U	UG/KG	1,2,4-Trichlorobenzene
1.1 U	UG/KG	Hexachloro-1,3-Butadiene
2.2 U	UG/KG	1,2,3-Trichlorobenzene
27	%	% Moisture

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Sample **7847** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL
Program: SF
Id/Station: D0015 / APW-EB01
Media: EQUIPMENT RINSE BLANK

Produced by: Hale, Sallie
Requestor:
Project Leader: WJOYNER
Beginning: 08/09/2005 08:00
Ending:

RESULTS	UNITS	ANALYTE
1.0 U	UG/L	Dichlorodifluoromethane
1.0 U	UG/L	Chloromethane
1.0 U	UG/L	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
1.0 U	UG/L	Methyl T-Butyl Ether (MTBE)
1.0 UJ	UG/L	Bromomethane
1.0 U	UG/L	Cyclohexane
1.0 U	UG/L	Vinyl Chloride
1.0 U	UG/L	Chloroethane
1.0 U	UG/L	Trichlorofluoromethane (Freon 11)
1.0 U	UG/L	1,1-Dichloroethene (1,1-Dichloroethylene)
1.0 U	UG/L	Methylene Chloride
2.0 U	UG/L	Acetone
1.0 U	UG/L	Carbon Disulfide
1.0 U	UG/L	Methyl Acetate
1.0 U	UG/L	1,1-Dichloroethane
1.0 U	UG/L	cis-1,2-Dichloroethene
1.0 U	UG/L	2,2-Dichloropropane
5.0 U	UG/L	Methyl Ethyl Ketone
1.0 U	UG/L	Bromochloromethane
1.0 U	UG/L	trans-1,2-Dichloroethene
1.0 U	UG/L	Chloroform
1.0 U	UG/L	1,2-Dichloroethane
1.0 U	UG/L	1,1,1-Trichloroethane
1.0 U	UG/L	1,1-Dichloropropene
1.0 U	UG/L	Carbon Tetrachloride
1.0 U	UG/L	Bromodichloromethane
1.0 U	UG/L	Methyl Isobutyl Ketone
1.0 U	UG/L	1,2-Dichloropropane
1.0 U	UG/L	Methylcyclohexane
1.0 U	UG/L	Dibromomethane
1.0 U	UG/L	trans-1,3-Dichloropropene
1.0 U	UG/L	Trichloroethene (Trichloroethylene)
1.0 U	UG/L	Benzene
1.0 U	UG/L	Dibromochloromethane
1.0 U	UG/L	1,1,2-Trichloroethane

RESULTS	UNITS	ANALYTE
1.0 U	UG/L	cis-1,3-Dichloropropene
1.0 U	UG/L	Bromoform
1.0 U	UG/L	Bromobenzene
1.0 U	UG/L	1,1,2,2-Tetrachloroethane
1.0 U	UG/L	Tetrachloroethene (Tetrachloroethylene)
1.0 U	UG/L	1,3-Dichloropropane
2.0 U	UG/L	Methyl Butyl Ketone
0.21 J	UG/L	Toluene
1.0 U	UG/L	Chlorobenzene
1.0 U	UG/L	1,1,1,2-Tetrachloroethane
1.0 U	UG/L	Ethyl Benzene
0.086 J	UG/L	(m- and/or p-)Xylene
1.0 U	UG/L	o-Xylene
1.0 U	UG/L	Styrene
1.0 U	UG/L	1,2,3-Trichloropropane
1.0 U	UG/L	o-Chlorotoluene
1.0 U	UG/L	p-Chlorotoluene
1.0 U	UG/L	1,3-Dichlorobenzene
1.0 U	UG/L	1,4-Dichlorobenzene
1.0 U	UG/L	1,2-Dichlorobenzene
1.0 U	UG/L	1,2-Dibromoethane (EDB)
1.0 U	UG/L	Isopropylbenzene
1.0 U	UG/L	n-Propylbenzene
1.0 U	UG/L	1,3,5-Trimethylbenzene
1.0 U	UG/L	tert-Butylbenzene
1.0 U	UG/L	1,2,4-Trimethylbenzene
1.0 U	UG/L	sec-Butylbenzene
1.0 U	UG/L	p-Isopropyltoluene
1.0 U	UG/L	n-Butylbenzene
2.0 U	UG/L	1,2-Dibromo-3-Chloropropane (DBCP)
1.0 U	UG/L	1,2,4-Trichlorobenzene
1.0 UJ	UG/L	Hexachloro-1,3-Butadiene
1.0 U	UG/L	1,2,3-Trichlorobenzene

Bromomethane J-qualified due to low recovery in CCV
J-qualified compound values less than 1.0 are >MDL but <MQL

Hexachlorobutadiene % recovery was low in LCSD.

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Sample **7848** FY **2005** Project: **05-0790**

Volatiles Scan

Facility: Former Accurate Plating & Weaponry Clearwater, FL
Program: SF
Id/Station: D0016 / APW-TB01
Media: TRIP BLANK - WATER

Produced by: Hale, Sallie
Requestor:
Project Leader: WJOYNER
Beginning: 08/09/2005 08:00
Ending:

RESULTS	UNITS	ANALYTE
1.0 U	UG/L	Dichlorodifluoromethane
0.24 J	UG/L	Chloromethane
1.0 U	UG/L	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)
1.0 U	UG/L	Methyl T-Butyl Ether (MTBE)
1.0 UJ	UG/L	Bromomethane
1.0 U	UG/L	Cyclohexane
1.0 U	UG/L	Vinyl Chloride
1.0 U	UG/L	Chloroethane
1.0 U	UG/L	Trichlorofluoromethane (Freon 11)
1.0 U	UG/L	1,1-Dichloroethene (1,1-Dichloroethylene)
1.0 U	UG/L	Methylene Chloride
2.0 U	UG/L	Acetone
1.0 U	UG/L	Carbon Disulfide
1.0 U	UG/L	Methyl Acetate
1.0 U	UG/L	1,1-Dichloroethane
1.0 U	UG/L	cis-1,2-Dichloroethene
1.0 U	UG/L	2,2-Dichloropropane
5.0 U	UG/L	Methyl Ethyl Ketone
1.0 U	UG/L	Bromochloromethane
1.0 U	UG/L	trans-1,2-Dichloroethene
1.0 U	UG/L	Chloroform
1.0 U	UG/L	1,2-Dichloroethane
1.0 U	UG/L	1,1,1-Trichloroethane
1.0 U	UG/L	1,1-Dichloropropene
1.0 U	UG/L	Carbon Tetrachloride
1.0 U	UG/L	Bromodichloromethane
1.0 U	UG/L	Methyl Isobutyl Ketone
1.0 U	UG/L	1,2-Dichloropropane
1.0 U	UG/L	Methylcyclohexane
1.0 U	UG/L	Dibromomethane
1.0 U	UG/L	trans-1,3-Dichloropropene
1.0 U	UG/L	Trichloroethene (Trichloroethylene)
1.0 U	UG/L	Benzene
1.0 U	UG/L	Dibromochloromethane
1.0 U	UG/L	1,1,2-Trichloroethane
1.0 U	UG/L	cis-1,3-Dichloropropene
1.0 U	UG/L	Bromoform
1.0 U	UG/L	Bromobenzene
1.0 U	UG/L	1,1,2,2-Tetrachloroethane
1.0 U	UG/L	Tetrachloroethene (Tetrachloroethylene)
1.0 U	UG/L	1,3-Dichloropropane
2.0 U	UG/L	Methyl Butyl Ketone
1.0 U	UG/L	Toluene
1.0 U	UG/L	Chlorobenzene
1.0 U	UG/L	1,1,1,2-Tetrachloroethane
1.0 U	UG/L	Ethyl Benzene
2.0 U	UG/L	(m- and/or p-)Xylene
1.0 U	UG/L	o-Xylene
1.0 U	UG/L	Styrene
1.0 U	UG/L	1,2,3-Trichloropropane
1.0 U	UG/L	o-Chlorotoluene
1.0 U	UG/L	p-Chlorotoluene
1.0 U	UG/L	1,3-Dichlorobenzene
1.0 U	UG/L	1,4-Dichlorobenzene
1.0 U	UG/L	1,2-Dichlorobenzene
1.0 U	UG/L	1,2-Dibromoethane (EDB)
1.0 U	UG/L	Isopropylbenzene
1.0 U	UG/L	n-Propylbenzene
1.0 U	UG/L	1,3,5-Trimethylbenzene
1.0 U	UG/L	tert-Butylbenzene
1.0 U	UG/L	1,2,4-Trimethylbenzene
1.0 U	UG/L	sec-Butylbenzene
1.0 U	UG/L	p-Isopropyltoluene
1.0 U	UG/L	n-Butylbenzene
2.0 U	UG/L	1,2-Dibromo-3-Chloropropane (DBCP)
1.0 U	UG/L	1,2,4-Trichlorobenzene
1.0 UJ	UG/L	Hexachloro-1,3-Butadiene
1.0 U	UG/L	1,2,3-Trichlorobenzene

Bromomethane J-qualified due to low recovery in CCV
Chloromethane J-qualified because value is >MDL but <MQL

Hexachlorobutadiene % recovery was low in LCSD.

U-Analyte not detected at or above reporting limit. | J-Identification of analyte is acceptable; reported value is an estimate. | UJ-Analyte not detected at or above reporting limit. Reporting limit is an estimate.
N-Presumptive evidence analyte is present; analyte reported as tentative identification. | NJ-Presumptive evidence analyte is present; analyte reported as tentative identification. Reported value is an estimate.
K-Identification of analyte is acceptable; reported value may be biased high. Actual value expected to be less than the reported value.
L-Identification of analyte is acceptable; reported value may be biased low. Actual value expected to be greater than reported value.
NA-Not Analyzed. | NAI-Not Analyzed due to Interferences. | A-Analyte analyzed in replicate. Reported value is "average" of replicates.
R-Presence or absence of analyte can not be determined from data due to severe quality control problems. Data are rejected and considered unusable.

Diana.Wood@stb.dot.gov
09/26/2005 03:43 PM

To William Joyner/R4/USEPA/US@EPA
cc
bcc
Subject Greenville County Railroad Abandonment

Mr. Joyner -

As you are aware from our discussion last Friday September 23rd, the Greenville County Economic Development Corporation has filed a petition with the US Surface Transportation Board (STB) seeking abandonment of approximately 11.8 miles of rail line between milepost 0.0 in Greenville, SC, and milepost 11.8 in Travelers Rest, SC ("The Northern Segment"), and discontinuance of service over 3.29 miles of line, between milepost AJK 585.34 in East Greenville, SC, and milepost 588.63 in Greenville County ("The Southern Segment"). According to the Service list provide by the applicant's attorney, the Environmental and Historic Report was submitted to the Region 4 EPA and the Columbia office of the SC Dept of Health and Environmental Control for comment. Although we didn't receive comments from the EPA, the SC Dept of Health and Environmental Control commented that salvage activities could cause a release of contaminants into neighboring waterways. They suggested forwarding a copy of the Environmental and Historic Report to the SC Dept of Health and Environmental Control, Bureau of Land and Waste Management for further review. I followed up with a request to the applicant's attorney, and then proceeded (under specified deadlines associated with the EA process) to write an Environmental Assessment (EA), based on all available information. Since the Bureau of Land and Waste Management had yet to respond, I added a condition that required the Greenville County Economic Development Corp to consult with the SC Dept of Health and Environmental Control prior to commencement of any salvage activities, and to report the results to the STB.

During the comment period, this office received comments from two parties stating that there was contamination adjacent to portions of the Northern Segment, and that three sites were listed in the EPA CERCLIS data base as Superfund sites (Union Bleachery, Kerr Manufacturing, and a Quarry). In response, I contacted Chris Bartley in the Greenville office of SC Dept of Health and Environmental Control, Bureau of Waste Management. Mr. Bartley drafted a letter (with map) that discussed the Union Bleachery site. Although monitoring revealed the presence of contamination in the immediate vicinity of the tracks, Mr. Bartley stated in a telephone conversation that no conclusions could be rendered as to the actual contamination of the railroad right-of-way because the area in question had never been tested. Last Friday, I met with my section Chief, Victoria Rutson, and our in-house attorney, Evelyn Kitay, to draft language that would ensure that salvage activities are conducted in accordance with applicable environmental and safety regulations. We determined that prior to salvage of any track materials (removal of track, ties and ballast) adjacent to the portions of the identified sites of contamination (see attached letter from Mr. Hawkins), the Greenville Economic Development Corp shall consult with the appropriate parties and take the appropriate measures recommended by the SC Dept of Health and Environmental Control, Bureau of Waste Management, and the EPA Region 4, and report the results of the consultation to the STB.

Due to the time constraints associated with the EA process, I am required by law to finalize comments tomorrow, September 27, 2005. Please review this request, the attached EA and letter from Mr. Hawkins, as well as the letter from Chris Bartley I sent you last Friday, and let me know by COB today if you have any changes to the wording. The docket number is AB 490 1X, should you want to review the file on our web site at www.stb.dot.gov (under e-filings and environmental correspondence).

Thanks

Diana Wood
Environmental Protection Specialist
Section of Environmental Analysis
US Surface Transportation Board
1925 K Street NW, Suite 500
Washington, DC 20423
202-565-1552

AB4901XEA.doc EI-1670.pdf Letter from SCDHEC Chris Bartley.pdf

SITE INSPECTION WORKSHEETS

CERCLIS IDENTIFICATION NUMBER
FLD

SITE LOCATION			
SITE NAME: LEGAL, COMMON, OR DESCRIPTIVE NAME OF SITE Former Accurate Plating and Weaponry			
STREET ADDRESS, ROUTE, OR SPECIAL LOCATION IDENTIFIER 1937 Calumet Street			
CITY Clearwater	STATE FLORIDA	ZIP CODE	TELEPHONE
COORDINATES: LATITUDE AND LONGITUDE 27° 59' 7" N / 82° 45' 27" W	TOWNSHIP, RANGE, AND SECTION S E		

OWNER/OPERATOR IDENTIFICATION					
OWNER Clearwater Tops, Inc.			OPERATOR		
OWNER ADDRESS 1937 Calumet Street			OPERATOR ADDRESS		
CITY Clearwater			CITY		
STATE FLORIDA	ZIP CODE	TELEPHONE	STATE FLORIDA	ZIP CODE	TELEPHONE

SITE EVALUATION		
AGENCY/ORGANIZATION Bureau of Waste Cleanup/Florida Department of Environmental Protection		
INVESTIGATOR Craig Feeny		
CONTACT Barbara Dick		
ADDRESS 61 Forsyth Street, S.W.		
CITY Atlanta	STATE Georgia	ZIP CODE 32399-2400
TELEPHONE 404-562-8923		

GENERAL INFORMATION

Site Description and Operation History: Provide a brief description of the site and its operation history. State the site name, owner, operator, type of facility and operations, size of property, activities that have or may have occurred at the site; note whether these activities are documented or alleged. Identity all source types and prior spills, floods, or fires. Summarize highlights of the PA and other investigations. Cite references.

The site is located at 1937 Calumet Street in a commercial/industrial area in Clearwater, Pinellas County, Florida(Fig. 1)[1-4]. The southern portion of the site is occupied by a one-story concrete block building, while unpaved parking lot occupies the northern portion of the site. Allen's Creek, a 15 feet wide and 10 feet deep drainage canal, borders the eastern boundary of the site and a 4 feet wide and 3 feet deep swale runs along the southern boundary of the site[7 (p. 1)].

Circa 1977, Accurate Plating and Weaponry (APW) operated a gun refinishing facility in the eastern portion of the on-site building. Activities conducted by APW included dismantling firearms, chemically removing the finish from firearms, rinsing parts, immersing parts in phosphoric acid solutions (i.e., "blueing") or electroplating gold, nickel or hardchrome finishes onto firearm parts. Firearm parts were rinsed either immersing the parts in overflow rinse water tanks of by hosing the parts by hand and allowing rinse water to discharge onto the floor. The rinse water was subsequently directed outside of the building and onto the ground via discharge ports located near the base of the eastern wall of the building[7 (pp. 1-2, Plate 2)].

In 1986, FDEP conducted a site inspection at the facility. During the inspection, a slight soil discoloration was observed near the base of the northeastern discharge port. A cracked and leaking polypropylene drum of spent chrome solution was also observed on a concrete pad outside of the southeast corner of the building[7 (p. 2)].

During 1993 & 1994, HSA Environmental conducted on-site sampling investigations that included the installation of several soil borings and monitoring wells and the collection of several on-site soil and ground water samples. Analyses of the ground water samples revealed evidence of PCE (47.57 ug/l) and TCE (45.64 ug/l) in HSAMW-3), while benzene (0.47 ug/l) and trans-1,2-dichloroethylene (0.73 ug/l) were detected in HSAMW-6 and HSAMW-7, respectively[6, 7 (p. 2)].

Sediment and surface water samples were also collected from two locations in a canal that lies along the eastern border of the site (Allen's Creek). Follow-up analyses documented a lead concentration in one sediment sample that exceeded the Florida SGAQ-TEL, but other analytical results for the sediment and surface water samples were unremarkable[6, 14].

On 10/29/98, QORE supervised the installation of a permanent shallow monitoring well to evaluate water quality in the vicinity of HSAMW-3 [7 (p. 3)]. The new monitoring well (MW-7) was installed approximately six feet east of the HSAMW-3 well and finished a depth of 13 feet below land surface (bls)[7 (p. 3)]. The new well was sampled on 10/30/98, and the ensuing analyses revealed contamination by cis-1,2-dichloroethylene (11,000 ug/l), PCE (1,700 ug/l) and TCE (580 ug/l). Each of the latter concentrations exceeded applicable Federal MCLs, but the source of the contamination was not identified[7 (p. 3), 12].

During 10-11/00, QORE conducted a follow-up contamination assessment, in which near-surface soil samples (0-1 ft. bls) were collected and screened for VOCs; two piezometers and two monitoring wells (MW-8 and MW-9) were installed; ground water elevations were measured in piezometers, as well as existing and newly installed wells; ground water samples were collected from six of the monitoring wells; a sediment sample was collected from a swale on the southern border of the site; and a sediment sample and a surface water sample were collected from the canal on the eastern border of the site[7 (pp. 10-12; Plate #2)].

All samples were subjected to analyses for volatile organics and volatile halocarbons. Metals analyses were only performed on soil and sediment samples. [7 (pp. 10-12)].
No volatiles were detected in soil samples and metals concentrations and soil samples—with the exception of chromium[1]—were below leachability SCTLs[7 (p. 11; Tables 3 & 4),11]. No volatiles were detected in a sediment sample collected from the swale on the southern border of the site or in surface water or sediment samples collected from the creek on the eastern border of the site[7 (Tables 3-5)]. No metals exceeded SCTLs or SQAGs in either of the sediment samples[7 (Table 4), 11,14].

In contrast to the analytical results for soil, sediment and surface water samples, volatiles, were detected in several ground water samples (i.e, MW-7, HSAMW-4, MW-8 and MW-9). The highest concentrations of such contaminants, including cis-1,2-dichloroethylene (4,200 ug/l), PCE (300 ug/l), TCE (170 ug/l), and vinyl chloride (4.8 ug/l) concentrations exceeding MCLs, were detected in a pair of ground water samples collected from MW-7. Also, a ground water sample collected nearby (HSAMW-4) contained cis-DCE and PCE concentrations (1,000 and 3.2 ug/l, respectively) in excess of MCLs. Cis-1,2-dichloroethylene, PCE, TCE and vinyl chloride were absent from the MW-9 background sample, located approximately 120 feet west (up-gradient) of the MW-7 and HSAMW-4 monitoring wells[7(p. 12; Table 6; Plates # 2-4)]. Numerous other contaminants were concurrently detected in shallow ground water samples (e.g., 1,2-dichlorobenzene, 1,4-dichlorobenzene, chlorobenzene, 1,1-dichloroethane, 1,1-dichloroethylene, trans-1,2-dichloroethylene, toluene, xylene. chloroform, and bromochloromethane), but none of the latter contaminants exceeded regulatory standards[7 (p. 12), 12].

[1] Total chromium exceeded the leachability SCTL for hexavalent chromium[7 (p. 11)], but trivalent chromium is generally predominant in most soils[13]

GENERAL INFORMATION (continued)

Site Sketch: Provide a sketch of the sites. Indicated all pertinent features of the site and nearby environments including sources of wastes, areas of visible and buried wastes, buildings, residences, access roads, parking areas, fences, fields, drainage patterns, water bodies, vegetation, wells, sensitive environments, and other features.

SOURCE DESCRIPTION: Describe all source at the site. Identify source type and relate to waste disposal operations. Provide source dimensions and the best available waste quantity information. Describe the condition of sources and all containment structures. Cite references.

SOURCE TYPES

Landfill:
A man-made (by excavation or construction) or natural hole in the ground into which wastes have come to be disposed by backfilling, or by contemporaneous soil deposition with waste disposal.

Source Impoundment:
A natural topographic depression, man-made excavation, or diked area, primarily formed from earthen materials (lined or unlined) and designed hold an accumulation of liquid wastes, waste containing free liquids, or sludges not backfilled or otherwise covered; depression may be wet with exposed liquid or dry if deposited liquid has evaporated, volatilized or leached; structures that may be described as lagoon, pond, aeration pit, settling pond, tailing pond, sludge pit; also a surface impoundment that has been covered with soil after the final deposition of waste materials (i.e., buried or backfilled).

Drum:
A portable container designed to hold a standard 55-gallon volume of wastes.

Tank and Non-Drum Container:
Any device, other than drum, designed to contain an accumulation of waste that provided structural support and is constructed primarily of fabricated materials (such as wood, concrete, steel, or plastic); any portable or mobile device in which waste is stored or otherwise handled.

Contaminated Soil:
An area or volume of soil onto which hazardous substance have been spilled, spread, disposed, or deposited.

Pile:
Any non-containerized accumulation above the ground surface of solid, non-flowing wastes; includes open dumps. Some types of waste piles are:

- Chemical Waste Pile: A pile consisting primarily of discarded chemical products, by-products, radioactive waste, or unused feedstocks.
- Scrap Metal or Junk Pile: A pile consisting primarily of scrap metal or discarded durable goods (such as appliances, automobiles, auto parts, batteries, etc.) composed of materials containing hazardous substances.
- Tailings Pile: A pile consisting primarily of any combination of overburdened from a mining operation and tailings from a mineral mining, beneficiation, or processing operation.
- Trash Pile: A pile consisting primarily of paper, garbage, or discarded non-durable goods containing hazardous substances.

Land Treatment:
Landfarming or other method of waste management in which liquid wastes or sludges are spread over land and tilled, or liquids are injected at shallow depths into soils.

Other:
Sources not in categories listed above.

GENERAL INFORMATION (continued)

Source Description: Include description of containment per pathway for ground water (see HRS Table 3-2), surface water (see HRS Table 4-2), and air (see HRS Tables 6-3 and 6-9).

Available evidence suggest an on-site release to ground water by chlorinated solvents. However, no area of contaminated soil has been identified[7(p. 12; Table 6; Plates # 2-4)].

Hazardous Waste Quantity (HWQ) Calculation: SI Tables 1 and 2 (See HRS Table 2-5, 2-6, and 5-2)

SINGLE SOURCE

TIER TYPE	A: Hazardous Constituent Quantity		B: Hazardous Wastestream Quantity		C: Volume		D: Area	
Quantity		lbs		lbs				
SOURCE TYPE	Landfill		Surface Impoundment		Drums		Tanks and Non-drum Container	
	Contaminated Soil		Pile		Land treatment		Others	

MULTIPLE SOURCE

TIER	SOURCE TYPE	QUANTITY	UNIT	WQ
D	Contaminated soil	unknown	N/A	10
			TOTAL WQ:	10

Attach additional pages, if necessary	**HWQ**	**10**

SI TABLE 1: HAZARDOUS WASTE QUANTITY (HWQ) SCORES FOR SINGLE SOURCE SITES AND FORMULAS FOR MULTIPLE SOURCE SITES

		Single Source Sites (assigned HWQ scores)	
(Column 1) TIER	(Column 2) Source Type	(Column 3) HWQ = 10	(Column 4) HWQ = 100
A Hazardous Constituent Quantity	N/A	HWQ =1 if Hazardous Constituent Quantity data are complete HWQ =10 if Hazardous Constituent Quantity data are NOT complete	>100 to 10,000 lbs
B Hazardous Wastestream Quantity	N/A	≤500,000 lbs	>500,000 to 50 million lbs
C Volume	Landfill	≤6.75 million ft^3 ≤250,000 yd^3	>6.75 million to 675 million ft^3 >250,000 to 25 million yd^3
	Surface Impoundment	≤6,750 ft^3 ≤250 yd^3	>6,750 to 675,000 ft^3 >250 to 25,000 yd^3
	Drums	≤1,000 drums	>1,000 to 100,000 drums
	Tanks and Non-drum Container	≤50,000 gallons	>50,000 to 5 million gallons
	Contaminated Soil	≤6.75 million ft^3 ≤250,000 yd^3	>6.75 million to 675 million ft^3 ≥250,000 to 25 million yd^3
	Pile	≤6,750 ft^3 ≤250 yd^3	>6,750 to 675,000 ft^3 >250 to 25,000 yd^3
	Other	≤6,750 ft^3 ≤250 yd^3	>6,750 to 675,000 ft^3 >250 to 25,000 yd^3
D Area	Landfill	≤340,000 ft^2 ≤7.8 acres	>340,000 to 34 million ft^2 >7.8 to 780 acres
	Surface Impoundment	≤1,300 ft^2 ≤0.029 acres	>1,300 to 130,000 ft^2 >0.029 to 2.9 acres
	Contaminated Soil	≤3.4 million ft^2 ≤78 acres	>3.4 million to 340 million ft^2 >78 to 7,800 acres
	Pile	≤1,300 ft^2 ≤0.029 acres	>1,300 to 130,000 ft^2 >0.029 to 2.9 acres
	Land Treatment	≤27,000 ft^2 ≤0.62 acres	>27,000 to 2.7 million ft^2 >0.62 to 62 acres

SI TABLE 1: (CONTINUED) HAZARDOUS WASTE QUANTITY (HWQ) SCORES FOR SINGLE SOURCE SITES AND FORMULAS FOR MULTIPLE SOURCE SITES

Single Source Sites (assigned HWQ scores)		Multiple Source Sites		
(Column 5) HWQ = 10,000	(Column 6) HWQ = 1,000,000	(Column 7) Divisor for Assigning Source	(Column 2) Source Type	(Column 1) TIER
>10,000 to 1 million lbs	>1 million lbs	lbs ÷ 1	N/A	**A** Hazardous Constituent Quantity
>50 million to 5 billion lbs	>5 billion lbs	lbs ÷ 5,000	N/A	**B** Hazardous Wastestream Quantity
>675 million to 67.5 billion ft^3 >25 million to 2.5 billion yd^3	>67.5 billion ft^3 >2.5 billion yd^3	ft^3 ÷ 67,500 yd^3 ÷ 2,500	Landfill	
>675,000 to 67.5 million ft^3 >25,000 to 2.5 million yd^3	>67.5 million ft^3 >2.5 million yd^3	ft^3 ÷ 67.5 yd^3 ÷ 2.5	Surface Impoundment	
>100,000 to 10 million drums	>10 million drums	drums ÷ 10	Drums	
>5 million to 500 million gallons	>500 million gallons	gallons ÷ 500	Tanks and Non-drum Container	**C** Volume
>675 million to 67.5 billion yd^3 >25 million to 2.5 billion yd^3	>67.5 billion yd^3 >2.5 billion yd^3	ft^3 ÷ 67,500 yd^3 2,500	Contaminated Soil	
>675,000 to 67.5 million ft^3 >25,000 to 2.5 million yd^3	>67.5 million ft^3 >2.5 million yd^3	ft^3 ÷ 67.5 yd^3 ÷ 2.5	Pile	
>675,000 to 67.5 million ft^3 >25,000 to 2.5 million yd^3	>67.5 million ft^3 >2.5 million yd^3	ft^3 ÷ 67.5 yd^3 ÷ 2.5	Other	
>34 million to 3.4 billion ft^2 >780 to 78,000 acres	>3.4 billion ft^2 >78,000 acres	ft^2 ÷ 3,400 acres ÷ 0.078	Landfill	
>130,000 to 13 million ft^2 >2.9 to 290 acres	>13 million ft^2 >290 acres	ft^2 ÷ 13 acres ÷ 0.00029	Surface Impoundment	
>340 million to 34 billion ft^2 >7,800 to 780,000 acres	> 34 billion ft^2 >780,000 acres	**ft^2 ÷ 34,000** acres ÷ 0.78	Contaminated Soil	**D** Area
>130,000 to 13 million ft^2 >2.9 to 290 acres	>13 million ft^2 >290 acres	ft^2 ÷ 13 acres ÷ 0.00029	Pile	
>2.7 million to 270 million ft^2 >62 to 6,200 acres	>270 million ft^2 >6,200 acres	ft^2 ÷ 270 acres ÷ 0.0062	Land Treatment	

HAZARDOUS WASTE QUANTITY (HWQ) CALCULATION

For each migration pathway, evaluate HWQ associated with sources that are available (i.e., incompletely contained) to migrate to that pathway. (Note: If Actual Contamination Targets exist for ground water, surface water, or air migration pathways, assign the calculated HWQ for one or more of the four tiers (SI Table 1; HRS Table 2-5) for which data exist: constituent quantity, wastestream quantity, source volume, and source area. Select the tier that gives the highest value as the source HWQ. Select the source volume HWQ rather than source area HWQ if data for both tiers are available.

Column 1 of SI Table 1 indicates the quantity tier. Column 2 lists source types for the four tiers. Columns 3, 4, 5 and 6 provide ranges of waste amount for sites with only one source, corresponding to HWQ scores at the tops of the columns. Column 7 provides formulas to obtain source waste quantity (WQ) values at sites with multiple sources.

1. Identify each source type.
2. Examine all waste quantity data available for each source. Record constituent quantity and waste stream mass or volume. Record dimensions of each source.
3. Convert source measurements to appropriate units for each tier to be evaluated.
4. For each source, use the formulas in the last column of SI Table 1 to determine the waste quantity value for each tier that can be evaluated. Use the waste quantity value obtained from the highest tier as the quantity value for the source.
5. Sum the values assigned to each source to determine the total site waste quantity.
6. Assign HWQ score from SI Table 2 (HRS Table 2-6).

Note these exceptions to evaluate soil exposure pathway HWQ (see HRS Table 5-2):

* The divisor for the area (square feet) of a landfill is 34,000.
* The divisor for the area (square feet) of a pile is 34.
* Wet surface impoundments and tanks and non-drum container are the only sources for which volume measurements are evaluated for the soil exposure pathway.

SI TABLE 2: HWQ SCORES FOR SITES

Site WQ Total	HWQ Score
0	0
1[a] to 100	**1[b]**
>100 to 10,000	100
>10,000 to 1 million	10,000
>1 million	1,000,000

[a] If the WQ total is between 0 and 1, round it to 1.

[b] If the hazardous constituent quantity data are not complete, assign the score of 10

SI TABLE 3: WASTE CHARACTERIZATION WORKSHEET

Site Name: Clearwater Top, Inc.

References: [7(p. 12; Table 6; Plates # 2-4)].

Source:

1. Contaminated soil
2. Contaminated soil
3.
4.
5.
6.
7.
8.
9.

SOURCE	HAZARDOUS SUBSTANCE	TOXICITY	GROUND WATER PATHWAY		SURFACE WATER PATHWAY										
					OVERLAND/FLOOD MIGRATION							GROUND WATER TO SURFACE WATER			
			GW Mobility (HRS Table 3-8)	Tox/ Mobility Value (HRS Table 3-9)	Per (HRS Tables 4-10 & 4-11)	Tox/Per Value (HRS Table 4-12)	Bioac Pot. (HRS Table 4-15)	Tox/Per/Bioac Value (HRS Table 4-16)	Ecotox (HRS Table 4-19)	Ecotox/ Pers (HRS Table 4-20)	Ecotox/ Pers/ Bioacc Value (HRS Table 4-21)	Tox/ Mob/ Pers/ Value (HRS Table 4-26)	Tox/ Mob/ Pers/ Bioacc Value (HRS Table 4-28)	Ecotox /Mob/ Pers Value (HRS Table 4-29)	Ecotox /Mob/ Pers/ Bioacc Value (HRS Table 4-30)
1	PCE	100	1	100											
	TCE	10	1	10											
	Vinyl chloride	10,000	1	10,000											
	Cis-1,2-DCE	100	1	100											

F: Water Type - Fresh, K: Karst, L: Water Body - Lake, O: Observed Release, Q: Deposit as Liquid R: Water Body - River S: Water Type - Salt

Ground Water Observed Release Substances Summary Table

On SI Table 4, list the hazardous substances associated with the site detected in ground water samples for that aquifer. Include only those substances directly observed or with concentrations significantly greater than background levels. Obtain toxicity values from the Superfund Chemical Data Matrix (SCDM). Assign mobility a value of 1 for all observed release substances regardless of the aquifer being evaluated. For each substance, multiply the toxicity by the mobility to obtain the toxicity/mobility factor value; enter the highest toxicity/mobility value for the aquifer in the space provided.

Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For FDAAL benchmarks, determine the highest percentages of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate this portion of fishery as subject to Level I concentrations. If the percentages are less than 100% or all are N/A, evaluate the fishery as Level II target.

Ground Water Actual Contamination Targets Summary Table

If there is an observed release at a drinking water well, enter each hazardous substance meeting the requirements for an observed release by well and sample ID on SI Table 5 and record the detected concentration.

Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For MCL and MCLG benchmarks, determine the highest percentage of benchmark obtained for any substances.

For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100 %, evaluate the population using the well as a **Level I** target. If these percentages are less than 100%, or all are N/A, evaluate the population using the well as a **Level II** target for that aquifer.

SI TABLE 4: GROUND WATER OBSERVED RELEASE SUBSTANCES (BY AQUIFER)

Sample ID	Hazardous Substance	Backgrd. Conc	Toxicity/Mobility	References
MW-1	Vinyl chloride	BDL	10,000	[7(p. 12; Table 6; Plates # 2-
		Highest Toxicity/Mobility Values		

SI TABLE 5: GROUND WATER ACTUAL CONTAMINATION TARGETS

Well ID	Level I	Level II	Population Served	References

Sample ID	Hazardous Substance	Conc.(ug/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

Well ID	Level I	Level II	Population Served	References

Sample ID	Hazardous Substance	Conc.(ug/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

SI TABLE 6 (FROM HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER TARGET POPULATIONS

SI TABLE 6A: OTHER THAN KARST AQUIFERS

DISTANCE FROM SITE	POP.	NEAREST WELL (CHOOSE HIGHEST)	POPULATION SERVED BY WELLS WITHIN DISTANCE CATEGORY												POP. VALUE
			1 TO 10	11 TO 30	31 TO 100	101 TO 300	301 TO 1000	1001 TO 3000	3001 TO 10,000	10,001 TO 30,000	30,001 TO 100,000	100,001 TO 300,000	300,001 TO 1,000,000	1,000,000 TO 3,000,000	
0 TO 1/4 MILE		20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455	
>1/4 TO 1/2 MILE	3,310	**18**	2	11	33	102	324	1,013	**3,233**	10,122	32,325	101,213	323,243	1,012,122	**3,233**
>1/2 TO 1 MILE	6,620	9	1	5	17	52	167	523	**1,669**	5,224	16,684	52,239	166,835	522,385	**1,669**
>1 TO 2 MILES	5,675	5	.7	3	10	30	94	294	**939**	2,939	9,385	29,384	93,845	293,842	**939**
>2 TO 3 MILES	41,781	3	.5	2	7	21	68	212	678	2,122	**6,778**	21,222	67,777	212,219	**6,778**
>3 TO 4 MILES	3,723	2	.3	1	4	13	42	131	**417**	1,306	4,171	13,060	41,709	130,596	**417**
		18												SUM=	**13,036**

SI TABLE 6B: KARST AQUIFERS

DISTANCE FROM SITE	POP.	NEAREST WELL (CHOOSE HIGHEST)	POPULATION SERVED BY WELLS WITHIN DISTANCE CATEGORY												POP. VALUE
			1 TO 10	11 TO 30	31 TO 100	101 TO 300	301 TO 1000	1001 TO 3000	3001 TO 10,000	10,001 TO 30,000	30,001 TO 100,000	100,001 TO 300,000	300,001 TO 1,000,000	1,000,000 TO 3,000,000	
0 TO 1/4 MILE		20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455	
>1/4 TO 1/2 MILE	3,310	20	2	11	33	102	324	1,013	**3,233**	10,122	32,325	101,213	323,243	1,012,122	**3,233**
>1/2 TO 1 MILE	6,620	20	2	9	26	82	261	817	**2,607**	8,163	26,068	81,623	260,680	816,227	**2,607**
>1 TO 2 MILES	5,675	20	2	9	26	82	261	817	**2,607**	8,163	26,068	81,623	260,680	816,227	**2,607**
>2 TO 3 MILES	41,781	20	2	9	26	82	261	817	2,607	8,163	**26,068**	81,623	260,680	816,227	**26,068**
>3 TO 4 MILES	3,723	20	2	9	26	82	261	817	**2,607**	8,163	26,068	81,623	260,680	816,227	**2,607**
		20												SUM=	**37,122**

REFERENCE: 1, 15,16,18-20,24-26

GROUND WATER PATHWAY

GROUND WATER USE DESCRIPTION

Describe Ground Water Use Within 4 miles of the Site::

Describe generalized stratigraphy, aquifers, municipal and private wells

This site is located within the Gulf Coastal Lowlands Geomorphologic Feature of the Central Geomorphologic Province of Florida. This area also comprises various karst terrain features, such as: sinkholes (predominantly cover-collapse) and sinkhole lakes. Three hydrostratigraphic units—the surficial aquifer system, intermediate aquifer system/confining unit and the Floridan aquifer system—exist in the site area [15,16,18-20].

The surficial aquifer is used primarily for lawn irrigation and is of limited use in domestic applications. Small diameter wells, open to the aquifer, yield between 5 to 30 gallons per minute. The water from this aquifer generally contains high levels of iron which results in staining of fixtures and utensils [15,16,20,21]. Moreover, shallow ground water at the site is not potable, due to a locally high chloride content (270 mg/kg)[13 (Table 4), 14 (p. 5)].

Underlying the surficial aquifer system is the intermediate aquifer system/confining unit [15,16,17,20,21]. Low permeability beds within the Middle and Upper Miocene Deposits and/or Hawthorn Group restricts the vertical movement of water to and from the overlying surficial aquifer and underlying Floridan aquifer system[15,16,17,20,21].

The Floridan aquifer system is the major source of potable groundwater in the area. The system consists of a series of limestones of Eocene to early Miocene age, which collectively function as a single hydrologic unit. The aquifer ranges in thickness from 1,000 feet (north Pinellas County) to 1,200 feet (southern Pinellas County) throughout the county[15,20]. Water in the Floridan aquifer system exists under water-table conditions north of Palm Harbor and west of Lake Tarpon. An 8-inch diameter well open the Upper Floridan aquifer system can yield several hundred gallons per minute (gpm) of water. Water from the Floridan aquifer is generally hard, particularly water from the Suwannee Limestone. In addition, local Floridan aquifer ground water is not potable (chloride concentration ~584 ppm), due to saltwater intrusion[13 (Table 4), 15 (p. 4), 15 (Fig. 16)].

Show Calculations of Ground Water Drinking Water Populations for each Aquifer:

Provide apportionment calculations for blended supply systems.

County average number of persons per		Referenc	1,24-26

Population served by supply wells located within four miles of site.
Clearwater Top
Clearwater, Pinellas County, Florida

Well Type	# of wells/ 0-1/4 mile population	# of wells/ 1/4-1/2 mile population	# of wells/ 1/2-1 mile population	# of wells/ 1-2 mile population	# of wells/ 2-3 mile population	# of wells/ 3-4 mile population
Commercial/Community				1/297	2/425	
City of Clearwater		2/3,310*	4/6,620*	1/1,655*	8/13,240*	
City of Dunedin				2/3,723	12/28,116	2/3,723
Total Pop.		3,310	6,620	5,675	41,781	3,723

Total population served within 4 miles = 61,109

* Apportioned population considering that approximately 77.3 % of the supply is purchased from Pinellas County Supply [24].

Clearwater system: 15 supply wells, 77.3 % of water purchased from County, population = 109,350

(109,350 people/15 wells)22.7% = 1,655 people per well

Dunedin system: population 37,227/20 supply wells = 1,861.35 people/well

GROUND WATER PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE	Score	Data Type	Reference
1. **OBSERVED RELEASE:** If sampling data or direct observation support a release to the aquifer, assign a score of **550**. Record observed release substance on SI Table 4.			
2. **POTENTIAL TO RELEASE:** Depth to aquifer : ______ feet. If sampling data do not support a release to the aquifer, and the site is in karst terrain or the depth to aquifer is 70 feet or less, assign a score of **500; otherwise, assign a score of 340.**	340		
. **OPTIONAL:** evaluate potential to release according to **HRS Section 3.**			
LR =			

TARGETS	Score	Data Type	Reference
Are any wells part of a blended system? Yes x No ______ If yes, attach a page to show apportionment calculations. 3. **ACTUAL CONTAMINATION TARGETS:** If analytical evidence indicates that any target drinking water well for the aquifer has been exposed to a hazardous substance from the site, evaluate the factor score for the number of people served (SI Table 5). Level I: ______ People * 10 = ______ Level II: ______ People * 1 = ______ TOTAL =	**0**		
4. **POTENTIAL CONTAMINATION TARGETS :** Determine the number of people served by drinking water wells for the aquifer or overlying aquifers that are not exposed to a hazardous substance from the site; record the population for each distance category in SI Table 6A or 6B. Sum the population values and multiply by 0.1.	**13,036 ⇒ 1,303.6 (non-karst)** **37,122 ⇒ 3,712.2 (karst)**		1,24-26
5. **NEAREST WELL:** Assign a score of 50 for any Level I Actual Contamination Targets for the aquifer or overlying aquifer. Assign a score of 45 if there are Level II targets but no Level I Targets. If no Actual Contamination Targets exist, assign the Nearest Well score from SI Table 6A or 6B. If no drinking water wells exist within 4 miles, assign 0.	**18 (non-karst) or 20 (karst)**		1
6. **WELLHEAD PROTECTION AREA (WHPA) :** If any source lies within or above a WHPA for the aquifer, or if a ground water observed release has occurred within a WHPA, assign a score of 20; assign 5 if neither condition applies but a WHPA is within 4 miles; otherwise assign 0.	**0**		
7. **RESOURCES :** Assign a score of 5 if one or more ground water resource applies; assign 0 if none applies. • Irrigation (5 acre minimum) of commercial food crops or commercial forage crops • Watering of commercial livestock • **Ingredient in commercial food preparation** • Supply for commercial aquaculture • Supply for a major or designated water recreation area, excluding drinking water use	**5**		1
SUM OF TARGET T =	1,327 or 3,712		

GROUND WATER MIGRATION PATHWAY SCORESHEET

Likelihood of Release to an Aquifer		Maximum Value	Value Assigned	References
1.	**Observed Release**	550		
2.	**Potential to Release**			
	2a. **Containment** (Table 3-2)	10	**10**	
	2b. **Net Precipitation** (Figure 3-2)	10	**3**	
	2c. **Depth to Aquifer** (Table 3-5)	5		
	2d. **Travel Time** (Table 3-6, Table 3-7)	35		
	2e. **Potential to Release** : 2a * (2b + 2c + 2d)	500		
Likelihood of Release score (Higher Value of 1 and 2e)		550		

GROUND WATER PATHWAY WORKSHEET (CONCLUDED)

WASTE CHARACTERISTICS	Score	Data Type
8. If any Actual Contamination Targets exist for the aquifer or overlying aquifers, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if no Actual Contamination Targets exist, assign the hazardous waste quantity score calculated for sources available to migrate to ground water.	10	7
9. Assign the highest ground water toxicity/mobility value from SI Table 3 or 4.	10,000	7
10. Multiply the ground water toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score (**WC**) from the table below : (from HRS Table 2-7)	18	

Waste Characteristics Product			WC Score
0			0
>0	to	<10	1
10	to	<100	2
100	to	<1,000	3
1,000	to	10,000	6
10,000	to	<1 E + 05	10
1 E + 05	**to**	**<1 E + 06**	**18**
1 E + 06	to	<1 E + 07	32
1 E + 07	to	<1 E + 08	56
1 E + 08	to	<1 E + 09	100
1 E + 09	to	<1 E + 10	180
1 E + 10	to	<1 E + 11	320
1 E + 11	to	<1 E + 12	560
1 E + 12	or	Greater	1,000

WC = **18**

Multiply LR by T and by WC. Divide the product by 82,500 to obtain the ground water pathway score for each aquifer. Select the highest aquifer score. If the pathway score is greater than 100, assign 100.

GROUND WATER PATHWAY SCORE :

$$\frac{\mathbf{340 \times 3{,}712 \times 18}}{\mathbf{82{,}500}} = \mathbf{275.36 \Rightarrow 100\ (karst)}$$

$$\frac{\mathbf{340 \times 1{,}327 \times 18}}{\mathbf{82{,}500}} = \mathbf{98.44\ (non\text{-}karst)}$$

LR * T * WC / 82,500 = **98.44 or 100** **(Maximum of 100)**

SITE FINAL SCORE

SITE SCORE CALCULATION	S	S^2
GROUND WATER PATHWAY SCORE (S_{GW})	100	10,000
SURFACE WATER PATHWAY SCORE (S_{SW})		
SOIL EXPOSURE SCORE (S_S)		
AIR PATHWAY SCORE (S_A)		
SITE SCORE : $((S_{GW}^2+S_{SW}^2+S_S^2+S_A^2)/4)^{1/2}$		50

COMMENTS

The site was once occupied by a gun refinishing facility that had been involved in chemically stripping off finishes, rinsing gun parts and electroplating.on nickel. Hardchrome or gold or blueing finishes, using phosphoric acid. Rinsewater was discharged to the ground then allowed to discharge on the ground outside of the building[7]. During recent site investigations, high concentrations of TCE, PCE, cis-1,2-DCE and vinyl chloride have been repeatedly detected in ground water samples collected south of the "blueing area". In the absence of similarly high concentrations in up-gradient ground water samples, an observed release of chlorinated solvents to the surficial aquifer was implicitly established that the site was the source of the contaminants. However, no evidence of significant on-site soil contamination by chlorinate solvents was documented among many on-site soil and sediment samples collected in the vicinity of the site. Chromium was detected above the leachability SCTL in a soil sample collected beneath the foundation of an on-site building, and a lead concentration exceeding the SQAG-TEL was detected in a sediment sample collected from an adjacent, down-gradient creek (Allen's Creek). But neither of the two metals exceeded standards in any other samples[7].

Two of 15 municipal supply wells operated by the City of Clearwater are located within ½-mile of the site. Four additional Clearwater municipal supply wells are located between ½-1 mile of the site; aother supply well is located approximately 2 miles from the site; and the remaining 8 wells that serve that system are located between 2-3 miles of the site. The Clearwater municipal water system provides drinking water to an estimated service population of 109,350 Approximately 22.7% of the water supply is derived from municipal wells, while the bulk of the system's drinking water is purchased from Pinellas County[1, 7 (p. 13), 24,26].

The City of Dunedin operates 20 municipal supply wells within a 4-mile radius of the site. Water drawn from the wells is treated by reverse osmosis prior to distribution to a service population of 37,227[25,26]. Five of the wells are located between 1-2 miles of the site. Another 12 of the wells are located between 2-3 miles of the site. The remaining two municipal supply wells are located between 3-4 miles of the site[1,25,26]

All of the Clearwater or Dunedin municipal wells are finished in the Floridan aquifer and none are located directly down-gradient the site[1,24-26].

Although an observed release to the surficial aquifer was apparent, all alternative off-site sources of contamination were not investigated. Accordingly, the site was scored using the Floridan aquifer as the aquifer of concern and applying the default Potential to Release Factor Value of 340. The waste quantity for the source was not known, so a minimal quantity of 10 was associated with the site and a toxicity factor of 10,000 was associated with vinyl chloride (a component of the apparent observed release), yielding a Waste Characteristics Factor Category Value of 18. A Targets Factor Value of 3,712 was calculated for the 38 Floridan aquifer system wells located within 4 miles of the site. The resulting product of the Likelihood to Release, Waste Characteristics and Targets Factor Values was more than 100, so the final score for the ground Water Migration Pathway was truncated at 100. No additional exposure pathways were evaluated, because the overall Site Score was 50.

APPENDIX C

SITE INSPECTION WORKSHEETS

This appendix consist of worksheets that can be used to generate an SI site score. Completion of these worksheets is not required, but the SI investigator must evaluate an SI score, either by these worksheets, PREscore, or other Regional scoring tools.

The worksheets consist of instructions and data tables to be filled in with scores from HRS reference tables. The data table may also call for Data Type and References.

DATA TYPE: The Data Type columns should by filled in with an **H**, **Q**, or + if the data are HRS quality and well documented. The Data type column should be filled in with an **E**, **X**, or - if the data represent estimates, approximations, or are not fully documented. This type identifies data gaps for the expanded SI to investigate.

REFERENCES: The Reference columns should be filled in with coded reference numbers. The numbered reference list should be attached to the numbering should be cross-referenced to the SI Narrative Report.

The SI investigator will need the current Superfund Chemical Data Matrix(SCDM) OSWER Directive 9345.1-13 (revised semi-annually) to complete these worksheets

U . S . E P A R E G I O N I V

SDMS

Unscannable Material Target Sheet

DocID: 10557523 Site ID: FLD051482749

Site Name: Former Accurate Weaponry

Nature of Material:

Map:		Computer Disks:	
Photos:		CD-ROM:	
Blueprints:		Oversized Report:	
Slides:		Log Book:	

Other (describe): Texture map

Amount of material:

Please contact the appropriate Records Center to view the material.

2

Send To Printer Back To TerraServer Change to 11x17 Print Size Show Grid Lines Change to Landscape

USGS Clearwater, Florida, United States 01 Jul 1987

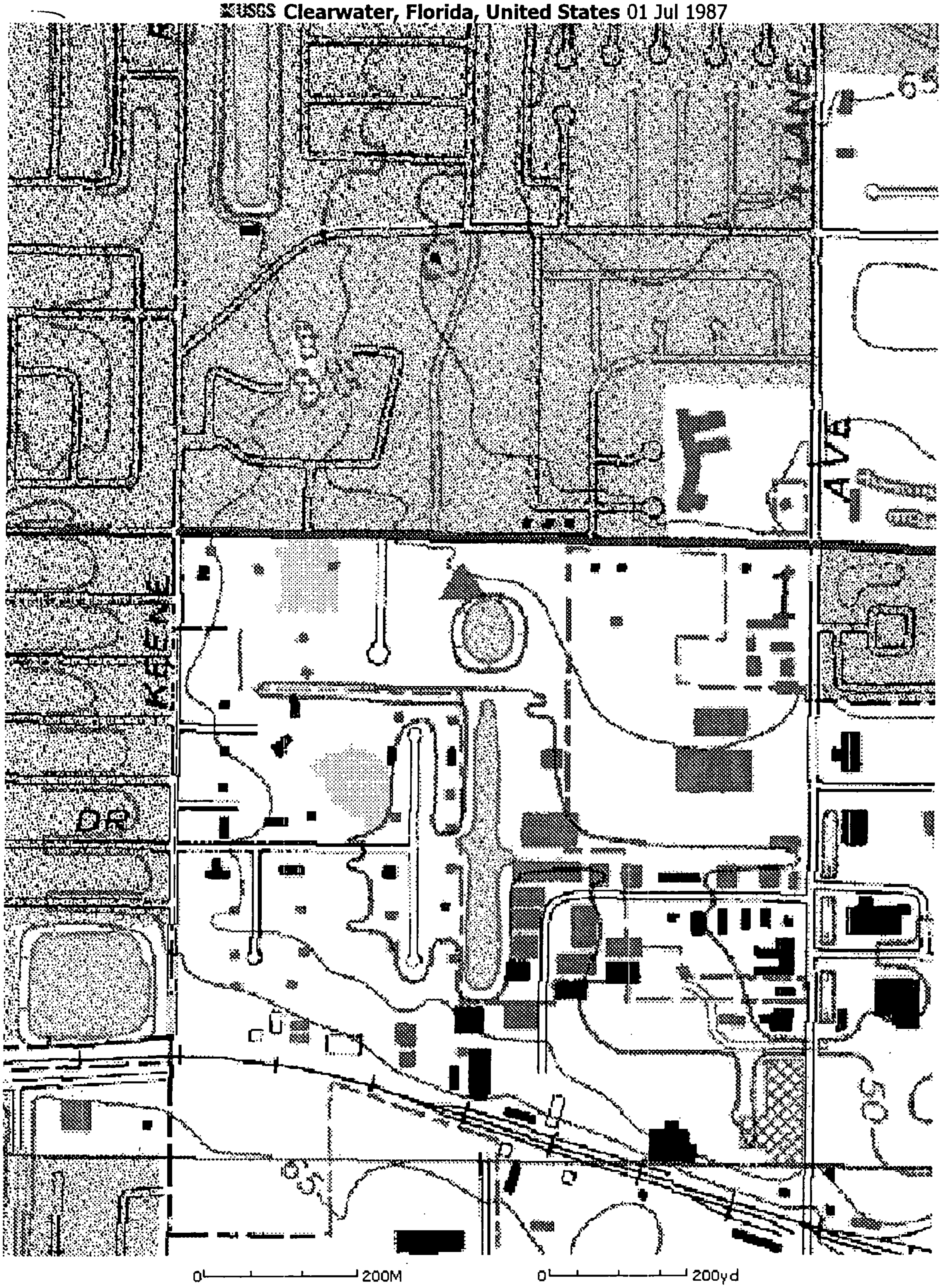


Image courtesy of the U.S. Geological Survey

3

Send To Printer Back To TerraServer Change to 11x17 Print Size Show Grid Lines Change to Landscape

USGS **Clearwater, Florida, United States** 30 Dec 1998

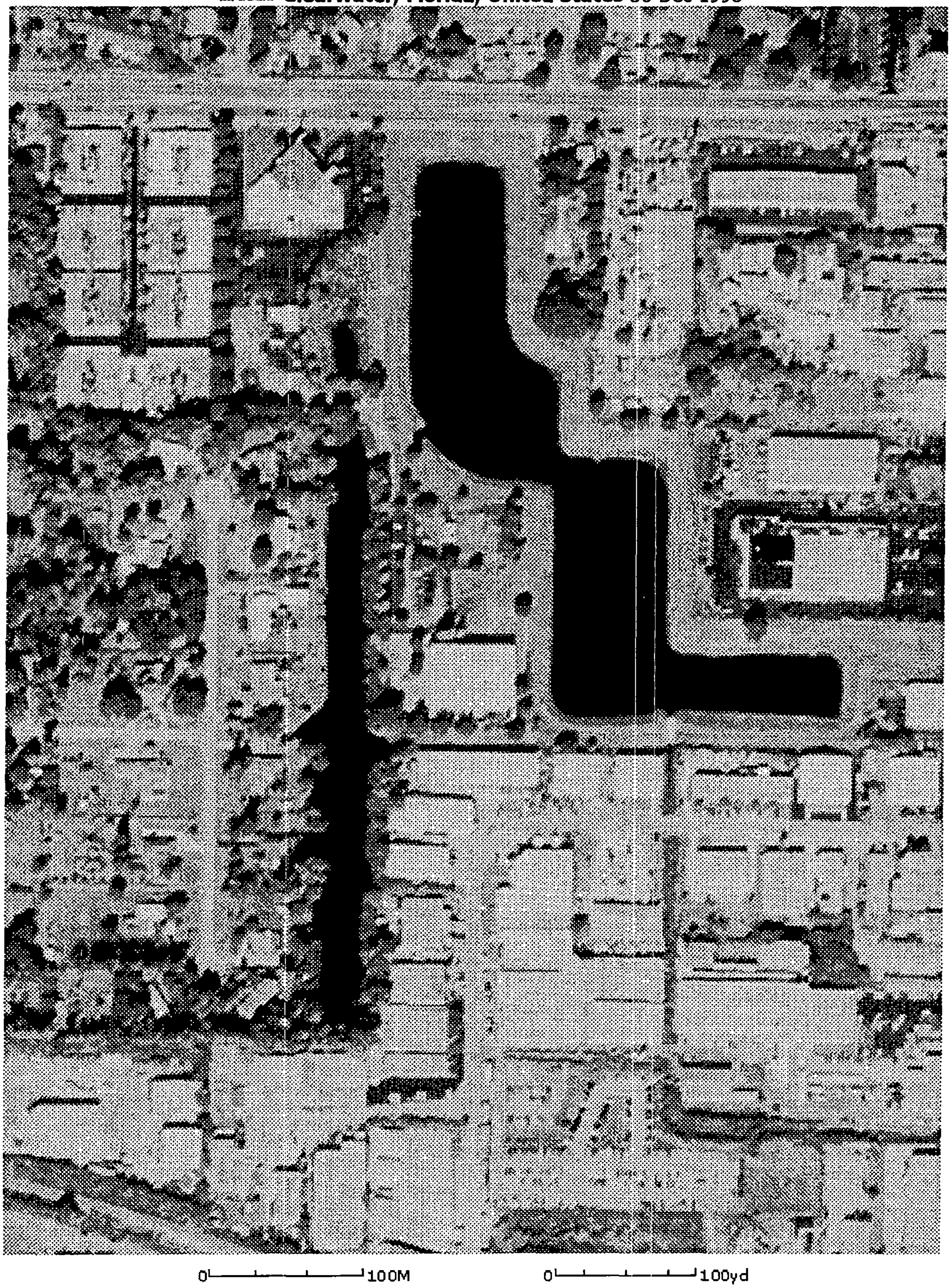


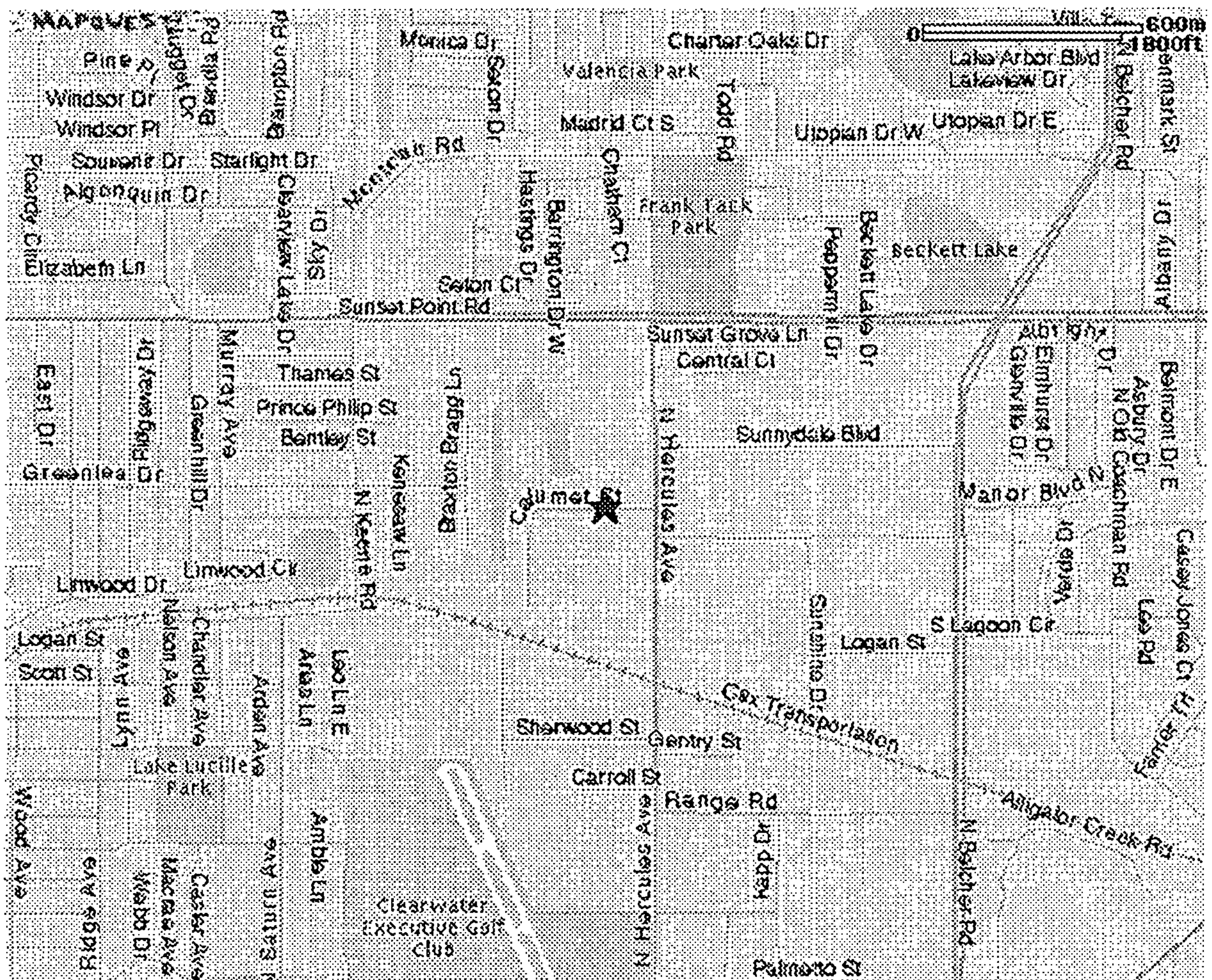
Image courtesy of the U.S. Geological Survey

4

Send To Printer Back to Map

1937 Calumet St
Clearwater FL
33765-1153 US

Notes:



This map is informational only. No representation is made or warranty given as to its content. User assumes all risk of use. MapQuest and its suppliers assume no responsibility for any loss or delay resulting from such use.

Accurate Plating & Weaponry P8212

atlanta testing
& engineering

1211 tech blvd., suite 200 / tampa, florida 33619 / phone (813) 623-6646 / fax (813) 623-3795

February 12, 1999

Florida Department of Environmental Protection
3804 Coconut Palm Drive
Tampa, Florida 33619

Attention: Ms. Kimberly D'Arcy
Hazardous Waste Section

Re: Ground Water Quality Sampling Results
Clearwater Top Company, Inc.
Clearwater, Florida
For Clearwater Top Company, Inc.

Ladies and Gentlemen:

Atlanta Testing & Engineering (AT&E) is pleased to present the results of the ground water quality sampling conducted at the Clearwater Top Company, Inc. facility in Clearwater, Florida. The work was performed according to AT&E's October 28, 1998 proposal to Ms. Ruth Fedorsyn, owner of the property. The project background, field investigation procedures, laboratory results and conclusions are included herein.

BACKGROUND

As directed by Ms. Kimberly D'Arcy of the Florida Department of Environmental Protection (FDEP), AT&E attempted to collect a ground water sample from an existing temporary monitor well designated MW-3. During sampling, AT&E identified that the well was plugged above the water table and that an unknown substance had apparently been poured into the well casing above the plug. Due to health and safety considerations, AT&E collected a sample of the unknown liquid for analysis by Savannah Laboratories and Environmental Services, Inc. (SLES). The results indicate that, other than a high pH, the unknown liquid did not contain detectable concentrations of the contaminants of concern. The liquid was biled from the well and containerized for proper disposal. AT&E then attempted to install a temporary well adjacent to well MW-3 using a hand auger to complete the sampling directed by Ms. D'Arcy. Due to subsurface debris, AT&E was unable to install this temporary well. Based on these results, AT&E prepared a proposal to Ms. Fedorsyn to install a permanent monitor well and collect a ground water sample for analysis of purgeable aromatic hydrocarbons, as directed by Ms. D'Arcy. This report described the additional assessment activities conducted at the Clearwater Top Company site.

\\ATE_NT_SERVER\VOL1\ENV\PROJECTS\P8212\report.DOC

FIELD INVESTIGATION PROCEDURES

Per our proposal to Ms. Fedorsyn, AT&E personnel installed a shallow monitor well on October 29, 1998, to evaluate the ground water quality beneath the site in the vicinity of existing monitor well MW. The new monitor well (designated MW-7), was installed approximately six feet east of existing well MW-3. The well was constructed by the hollow-stem auger method using two-inch diameter, threaded, PVC screen and casing to a depth of approximately 13 feet below the ground surface. A filter pack consisting of 20/30-size silica sand was placed in the annulus around the screened interval. An 8-inch steel manhole and a 2-foot by 2-foot concrete protective pad were installed around the well. The well was developed and purged according to procedures described in AT&E's FDEP-approved Comprehensive Quality Assurance Plan (CompQAP). Also per the proposal, the existing, unusable temporary well MW-3 was removed and the hole filled to the surface with grout.

On October 30, 1998, AT&E collected a ground water sample from well MW-7 for laboratory analysis of purgeable halocarbons using EPA Method 601. Prior to sample collection, the well was purged to remove stagnant water from the well. A ground water sample was collected according to procedures identified in AT&E's Florida Department of Environmental Protection-approved Comprehensive Quality Assurance Plan (CompQAP).

RESULTS AND CONCLUSIONS

The results of the laboratory analysis of the ground water sample collected from MW-7 indicate the presence of cis-1,2-dichloroethylene at 11,000 micrograms per liter (ug/l); tetrachloroethylene at 1,700 ug/l; and, trichloroethylene at 580 ug/l. According to Chapter 62-550, Florida Administrative Code, the Maximum Contaminant Levels (MCLs) in Class G-II ground water for these constituents are: 70 ug/l, 3 ug/l, and 3 ug/l, respectively.

The laboratory results indicate that the ground water quality in the vicinity of existing wells MW-3 and new well MW-7 has been affected by chlorinated solvent constituents. No existing source of the solvent constituents could be identified; therefore, it is not known whether these constituents originated from past or present tenants onsite, or from offsite activities. Additional activities to identify the source of the solvent constituents in ground water are, therefore, warranted.

* * * *

If you have any questions concerning the results of the ground water quality sampling conducted at Clearwater Top Company, Inc., please call at 813-623-6646.

Yours very truly,

Atlanta Testing & Engineering

Jonathan E Hull

2-12-99

Jonathan E. Hull, P.G.
Principal Consultant

Attachments

Cc: Ms. Ruth Fedorsyn - Clearwater Top Company, Inc.

P8212

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • (813) 885-7427 • Fax (813) 885-7049

LOG NO: B8-32950
Received: 30 OCT 98
Reported: 09 NOV 98

Mr. Jon Hull
Atlanta Testing & Engineering
2963 Gulf to Bay Blvd, Ste 267
Clearwater, FL 34619

Client PO. No.: FACE/P8212

Project: P8212/Clearwater Top
Sampled By: Client
Code: 15388119
Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
32950-1	MW-7 103098	10-30-98/0940

PARAMETER	32950-1
Purgeable Halocarbons (601)	
Bromodichloromethane, ug/l	<100
Bromoform, ug/l	<500
Bromomethane, ug/l	<100
Carbon Tetrachloride, ug/l	<100
Chlorobenzene, ug/l	<100
Chloroethane, ug/l	<100
2-Chloroethylvinyl Ether, ug/l	<1000
Chloroform, ug/l	<100
Chloromethane, ug/l	<100
Dibromochloromethane, ug/l	<100
1,2-Dichlorobenzene, ug/l	<100
1,3-Dichlorobenzene, ug/l	<100
1,4-Dichlorobenzene, ug/l	<100
Dichlorodifluoromethane, ug/l	<100
1,1-Dichloroethane, ug/l	<100
1,2-Dichloroethane, ug/l	<100
1,1-Dichloroethylene, ug/l	<100
cis-1,2-Dichloroethylene, ug/l	11000
trans-1,2-Dichloroethylene, ug/l	<100
1,2-Dichloropropane, ug/l	<100
cis-1,3-Dichloropropene, ug/l	<100
trans-1,3-Dichloropropene, ug/l	<100
Methylene Chloride, ug/l	<500
1,1,2,2-Tetrachloroethane, ug/l	<100
Tetrachloroethylene, ug/l	1700
1,1,1-Trichloroethane, ug/l	<100
1,1,2-Trichloroethane, ug/l	<100
Trichloroethylene, ug/l	580
Trichlorofluoromethane, ug/l	<100
Vinyl Chloride, ug/l	<100

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • (813) 885-7427 • Fax (813) 885-7049

LOG NO: B8-32950
Received: 30 OCT 98
Reported: 09 NOV 98

Mr. Jon Hull
Atlanta Testing & Engineering
2963 Gulf to Bay Blvd, Ste 267
Clearwater, FL 34619

Client PO. No.: FACE/P8212

Project: P8212/Clearwater Top
Sampled By: Client
Code: 15388119

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
32950-2	Method Blank	
32950-3	Accuracy (%Rec)	
32950-4	Precision (%RPD)	
32950-5	Date Analyzed	

PARAMETER	32950-2	32950-3	32950-4	32950-5
Purgeable Halocarbons (601)				
Bromodichloromethane, ug/l	<1.0	---	---	11.09.98
Bromoform, ug/l	<5.0	---	---	11.09.98
Bromomethane, ug/l	<1.0	---	---	11.09.98
Carbon Tetrachloride, ug/l	<1.0	---	---	11.09.98
Chlorobenzene, ug/l	<1.0	58 %	6.9 %	11.09.98
Chloroethane, ug/l	<1.0	---	---	11.09.98
2-Chloroethylvinyl Ether, ug/l	<10	---	---	11.09.98
Chloroform, ug/l	<1.0	---	---	11.09.98
Chloromethane, ug/l	<1.0	---	---	11.09.98
Dibromochloromethane, ug/l	<1.0	---	---	11.09.98
1,2-Dichlorobenzene, ug/l	<1.0	---	---	11.09.98
1,3-Dichlorobenzene, ug/l	<1.0	---	---	11.09.98
1,4-Dichlorobenzene, ug/l	<1.0	---	---	11.09.98
Dichlorodifluoromethane, ug/l	<1.0	---	---	11.09.98
1,1-Dichloroethane, ug/l	<1.0	---	---	11.09.98
1,2-Dichloroethane, ug/l	<1.0	---	---	11.09.98
1,1-Dichloroethylene, ug/l	<1.0	67 %	6.0 %	11.09.98
cis-1,2-Dichloroethylene, ug/l	<1.0	---	---	11.09.98
trans-1,2-Dichloroethylene, ug/l	<1.0	---	---	11.09.98
1,2-Dichloropropane, ug/l	<1.0	---	---	11.09.98
cis-1,3-Dichloropropene, ug/l	<1.0	---	---	11.09.98
trans-1,3-Dichloropropene, ug/l	<1.0	---	---	11.09.98

SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • (813) 885-7427 • Fax (813) 885-7049

LOG NO: B8-32950
Received: 30 OCT 98
Reported: 09 NOV 98

Mr. Jon Hull
Atlanta Testing & Engineering
2963 Gulf to Bay Blvd, Ste 267
Clearwater, FL 34619

Client PO. No.: FACE/P8212

Project: P8212/Clearwater Top
Sampled By: Client
Code: 15388119

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
32950-2	Method Blank	
32950-3	Accuracy (%Rec)	
32950-4	Precision (%RPD)	
32950-5	Date Analyzed	

PARAMETER	32950-2	32950-3	32950-4	32950-5
Methylene Chloride, ug/l	<5.0	---	---	11.09.98
1,1,2,2-Tetrachloroethane, ug/l	<1.0	---	---	11.09.98
Tetrachloroethylene, ug/l	<1.0	---	---	11.09.98
1,1,1-Trichloroethane, ug/l	<1.0	---	---	11.09.98
1,1,2-Trichloroethane, ug/l	<1.0	---	---	11.09.98
Trichloroethylene, ug/l	<1.0	72 %	11 %	11.09.98
Trichlorofluoromethane, ug/l	<1.0	---	---	11.09.98
Vinyl Chloride, ug/l	<1.0	---	---	11.09.98

Method: 40 CFR Part 136
DOH Certification: E84282

ARW

Andre Rachmaninoff, Project Manager

Final Page Of Report

B832950

Serial Number

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

☐ 5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
☐ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (904) 878-3994 Fax: (904) 878-9504
☐ 414 SW 12th Avenue, Deerfield Beach, FL 33442 Phone: (954) 421-7400 Fax: (954) 421-2584
☐ 900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
☐ 6712 Benjamin Road, Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049
☐ 100 Alpha Drive, Suite 110, Destrehan, LA 70047 Phone: (504) 764-1100 Fax: (504) 725-1163

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: Clearwater Top
PROJECT NO.: P8212
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Jim Palmer
PHONE:
FAX:
CLIENT NAME: AT&E
CLIENT PROJECT MANAGER: Jon Hull
CLIENT ADDRESS (CITY, STATE, ZIP): Clearwater

MATRIX TYPE: AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (oil, solvent, etc)

REQUIRED ANALYSES: 601

PAGE ___ OF ___

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due:

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	NUMBER OF CONTAINERS SUBMITTED (601)	REMARKS
10/30/98	0940		MW-7.103098	X				3	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY (SIGNATURE)	DATE	TIME
			Jim B Palmer	10/30/98	1029			

RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
			[signature]	10-30-98	1029			

LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS:
[signature]	10-30-98	1135	☐ YES ☐ NO		B832950	

ORIGINAL

HSA ENVIRONMENTAL, INC.
Environmental and Engineering Services

Received by Emergency Response 5/17/96

December 21, 1993

Instrument Transformers, Inc.
1907 Calumet Street
Clearwater, Florida 34625

Attention: Mr. William D. Johnson
President

Subject: STATUS UPDATE LETTER
Phase II Environmental Assessment
Accurate Plating & Weaponry
1937 Calumet Street
Clearwater, Florida
HSA Project Number 2094-446

Dear Mr. Johnson:

This letter serves to update you with respect to the analytical results of our groundwater and soil quality evaluation performed at the above referenced site. Pursuant to the protocol as outlined within our proposal dated November 23, 1993, HSA installed three (3) shallow groundwater monitoring wells at strategic locations within the site, and collected and analyzed representative groundwater samples from each well for the presence of EPA Method 601 (common solvents), Priority Pollutant Metals (used in metal finishing), and Hexavalent Chromium (used for chrome plating). In addition, HSA collected an upstream and downstream surface water sample from the on-site drainage canal (along the eastern edge of property). These samples were also analyzed for the presence of the above referenced parameters. Finally, HSA collected three (3) soil/sediment samples. Two (2) of the samples were collected from the sediments within the drainage canal (1 upstream and 1 downstream), and the other sample was collected along the north side of the subject building. The following summary table illustrates only the organic contaminants (EPA Method 601 parameters) which were encountered within the groundwater samples:

Analyte	MW-3	MCL[1]
Vinyl Chloride	0.97	1
1,1-dichloroethene	0.49	7
trans-1,2-dichloroethene	1.27	100
1,1-dichloroethane	48.98	2,400[2]
trichloroethene	45.65	3
tetrachloroethene	47.57	3

[1] - Maximum Contaminant Level in accordance with Chapter 17-550 FAC.
[2] - Guidance Concentration in accordance with Chapter 17-520 FAC.

As illustrated above, you will note that only MW-3 exhibited elevated levels of organic contaminants. In consideration of alleged improper wastewater discharges within the general area of MW-3 in the past, it is reasonable to expect these elevated groundwater contaminant levels. Although several regulated contaminants were identified within the samples, only tetrachloroethene (PCE) and trichloroethene (TCE) exhibited concentrations above the State Maximum Contaminant Level (MCL).

The following table represents metals contaminants which were encountered within both the groundwater and soil:

Analyte	Water					Soil			
	MW-1	MW-2	MW-3	SW-1	MCL[1]	SS-1	SS-2	SS-3	MCL[2]
arsenic	ND	ND	ND	ND	50	ND	ND	1.79	10
chromium	ND	ND	16	ND	100	1.72	17.94	1.93	50
copper	ND	ND	ND	ND	1,000	ND	5.38	ND	NS
nickel	ND	ND	ND	ND	100	ND	6.56	1.33	NS
lead	ND	ND	ND	ND	15	3.99	50.27	1.36	108
zinc	56	16	ND	33	5,000	26.39	22.31	2.47	NS

[1] - Maximum Contaminant Level in accordance with Chapter 17-550 FAC.
[2] - Maximum Contaminant Level in accordance with Chapter 17-775 FAC.
NS - No Referenced Standard

As you will note, elevated metals concentrations were detected within the soil and groundwater; however, none of the samples were detected above their respective MCL.

To further ascertain the significance of the presence of chlorinated solvents and slightly elevated metals concentrations within the soil and groundwater, it will be necessary to identify Accurate Plating's former or continued "source" of discharge, along with the areal and vertical extent of impact to the subsurface. In order to accomplish these tasks, we are suggesting the following approach:

Task I - Internal Facility Audit

Perform an Internal Facility Audit at each of the individual warehouse suites located within the subject building on-site. It is anticipated that the results of this investigation will identify the nature and management of former and current waste handling practices. The resultant information may also lead to additional areas on-site which require subsurface investigation.

Task II - Delineation of Vertical and Horizontal Extent of Known Contamination

Based on the results of our preliminary investigation, it is anticipated that our scope of work will consist of the installation of three (3) additional shallow groundwater monitoring wells, one (1) deep well screened above the first competent confining unit, and one (1) Standard Penetration Test (SPT) (to evaluate subsurface lithology), Groundwater and soil samples will be analyzed for the presence of petroleum and chlorinated solvents.

Task III - Compilation of all Soil and Groundwater Analytical Data

Once the field efforts have been completed, and the analytical data has been received from the laboratory, HSA will compile the data, and evaluate the horizontal and vertical extent of contamination.

Task IV - Preparation of Report of Findings and Associated Recommendations

HSA will compile the results of Tasks I through IV and generate a comprehensive report of findings. The report will present our conclusions and recommendations in a concise manner, and will provide a preliminary cost estimate for site restoration as applicable.

An estimate for the services is attached. Upon your concurrence, we will commence work immediately. We anticipate completion of the final report on or about January 31, 1994.

If you should have any questions, please don't hesitate to contact us.

Sincerely,
HSA Environmental, Inc.

Todd W. Terhune, E.I.
Project Engineer

ENGINEERING SERVICES COST ESTIMATE

Task I - Internal Facility Audit

Principal: 1 hr. @ $125/hr.	$125.00
Professional Engineer: 8 hrs. @ $85/hr.	$680.00
Graphic Design: 1 hr. @ $30/hr.	$30.00

Task II - Delineation of Vertical and Horizontal Extent of Contamination

Principal: 1 hr. @ $125/hr	$125.00
Project Engineer: 4 hrs. @ $65/hr	$260.00
Environmental Specialist: 8 hrs. @ $40/hr.	$320.00
Environmental Technician: 8 hrs. @ $35/hr.	$280.00
Laboratory Services - ground water - EPA Method 601/602 (5 samples @ $150)	$750.00
Equipment Rental & Field Supplies (Well Construction Materials, Cent. Pump, Decon. Materials, *etc.*)	$400.00
Drill Rig - Standard Penetration Test/Deep Well	$500.00

Task III - Compilation of all Soil and Groundwater Quality Data

Principal: 1 hr. @ $125/hr.	$125.00
Project Engineer: 4 hrs. @ $65/hr.	$260.00

Task IV - Report Preparation (in addition to hours from Proposal #P553-2093)

Principal Review: 1 hr. @ $125/hr.	$125.00
Professional Engineer: 1 hr. @ $85/hr.	$85.00
Project Engineer: 8 hrs. @ $65/hr	$520.00
Environmental Specialist: 1 hr. @ $40/hr.	$40.00
Graphic Design: 2 hrs. @ $30/hr.	$60.00
Secretarial: 2 hrs. @ $25/hr.	$50.00
TOTAL:	**$4,735.00**

Progress Environmental Laboratories

4420 Pendola Point Road
Tampa, Florida 33619
(813) 247-2805
FAX: (813) 248-1537

- CERTIFICATE OF ANALYSIS -
(HRS #E84207 and FDER CompQap #900306G)

To: HSA, Inc.
4019 E. Fowler Ave.
Tampa Fl 33617

Report Date: 12/15/93

Attn: Todd Terhune

Collection Information:

Sample Date: 12/06/93
Sample Time:
Sampled By :

PEL Lab # : 101666
Client ID : Accurate Plating;MW-3
Project ID :
Location :
Matrix : Water

ND = Less than MDL

* Indicates analyses run by an outside lab
(HRS#E86240 and CompQap #900376G)

Lab#	Parameter	Method	3 Results	4	Units	MDL
101666	Dichlorofluoromethane	EPA 8010	ND		ug/l	0.45
	Chloromethane	EPA 8010	ND		ug/l	0.53
	Vinyle Chloride	EPA 8010	0.97	0	ug/l	0.70
	Bromomethane	EPA 8010	ND		ug/l	0.38
	Chloroethane	EPA 8010	ND		ug/l	0.53
	Trichlorofluoromethane	EPA 8010	ND		ug/l	0.49
	1,1-dichloroethene	EPA 8010	0.49	0	ug/l	0.34
	Methylene Chloride	EPA 8010	ND		ug/l	0.48
	trans-1-2-dichloroethene	EPA 8010	1.27	0	ug/l	0.15
	1,1-Dichloroethane	EPA 8010	48.98	1.66	ug/l	0.55
	Chloroform	EPA 8010	ND		ug/l	0.19
	1,1,1-trichloroethane	EPA 8010	ND	.51	ug/l	0.12
	Carbontetrachloride	EPA 8010	ND		ug/l	0.19
	1,2-Dichloroethane	EPA 8010	ND		ug/l	0.24
	Trichloroethene	EPA 8010	45.65	2.17	ug/l	0.19
	1,2-Dichloropropane	EPA 8010	ND		ug/l	0.10
	Bromodichloromethane	EPA 8010	ND		ug/l	0.13
	2-Chloroethylvinylether	EPA 8010	ND		ug/l	0.25

Respectfully submitted, Vincent M Giampa
Vincent M. Giampa, Laboratory Supervisor

* Indicates analyses run by an outside lab
(HRS#E86240 and CompQap #900376G)

Lab#	Parameter	Method	Results	Units	MDL
101666	cis-1,3-dichloropropene	EPA 8010	ND	ug/l	0.12
	trans-1,3-dichloropropene	EPA 8010	ND	ug/l	0.20
	1,1,2-trichloroethane	EPA 8010	ND	ug/l	0.09
	tetrachloroethene	EPA 8010	47.57 — 14.36	ug/l	0.09
	dibromochloromethane	EPA 8010	ND	ug/l	0.14
	Bromoform	EPA 8010	ND	ug/l	0.19
	1,1,2,2-tetrachloroethane	EPA 8010	ND	ug/l	0.16
	Analysis Date	EPA 8010	12/07		0.00
	Antimony	EPA 204.2	ND	ug/l	1.60
	Arsenic	EPA 7060	ND	ug/l	5.17
	Lead	EPA 7421	ND	ug/l	1.40
	Mercury	EPA 7471	ND	ug/l	0.20
	Selenium	EPA 7740	ND	ug/l	2.30
	Thallium	EPA 279.2	ND	ug/l	1.20
	Beryllium	EPA 6010	ND	ug/l	1.00
	Cadmium	EPA 6010	ND	ug/l	7.40
	Chromium	EPA 6010	16.00	ug/l	9.30
	Copper	EPA 6010	ND	ug/l	24.10
	Nickel	EPA 6010	ND	ug/l	11.30
	Silver	EPA 6010	ND	ug/l	23.90
	Zinc	EPA 6010	ND	ug/l	14.50
	*Hexavalent Chromium	EPA 3500D	ND	mg/l	0.05

Respectfully submitted, Vincent M. Giampa
Vincent M. Giampa, Laboratory Supervisor

FAX MESSAGE

Progress Environmental Laboratories
4420 Pendola Point Road
Tampa, Florida 33619

Phone: (813) 247-2805

Fax: (813) 248-1537

Date: 1-31

To: Todd Terhune

Company: HSA

Fax Number: 971-1562

From: JAMES

THIS TRANSMITTAL CONSISTS OF 9 PAGE(S), EXCLUSIVE OF THE COVER SHEET.

HSA ENVIRONMENTAL, INC. Environmental and Engineering Services

FACSIMILE TRANSMITTAL SHEET

Date: February 3, 1994 Number of Pages to Follow 11

Fax Message To: Mr. Bill Johnson/Instrument Transformers

Office or Fax No.: (813)441-8066

Message From: Mr. George Thomas

Comments:

AM also sending a field note sketch, depicting the monitor well locations.

As I understand, "MW-7" is the deep well.

If I can be of further assistance, please call.

Regards,

If the following message is received poorly or incomplete, please notify us at (813) 971-3882.

4019 EAST FOWLER AVENUE ▪ TAMPA, FLORIDA 33617 TEL: (813) 971-3882 FAX: (813) 971-1862

Progress Environmental Laboratories

4420 Pendola Point Road
Tampa, Florida 33619
(813) 247-8005
FAX: (813) 248-1527

CERTIFICATE OF ANALYSIS -
(HRS #E84207 and FDER CompQap #500306G)

To: MSA, Inc.
Environmental and Engineering Services
4019 E. Fowler Avenue
Tampa, FL 33617

Attn: Todd Terhune

Report Date: 01/29/94

Collection Information:

Sample Date: 01/24/94
Sample Time: 1505
Sampled By : AB

PEL Lab # : 102672
Client ID : Accurate Plating:MW-5
Project ID : 2094-446
Location : Accurate Plating
Matrix : Water

ND = Less than MDL

Lab#	Parameter	Method	Results	units	MDL
102672	Dichlorofluoromethane	EPA 8010	ND	ug/l	0.45
	Chloromethane	EPA 8010	ND	ug/l	0.52
	Vinyle Chloride	EPA 8010	ND	ug/l	0.70
	Bromomethane	EPA 8010	ND	ug/l	0.38
	Chloroethane	EPA 8010	ND	ug/l	0.53
	Trichlorofluoromethane	EPA 8010	ND	ug/l	0.49
	1,1-dichloroethene	EPA 8010	ND	ug/l	0.34
	Methylene Chloride	EPA 8010	ND	ug/l	0.48
	trans-1-2-dichloroethene	EPA 8010	ND	ug/l	0.15
	1,1-Dichloroethane	EPA 8010	ND	ug/l	0.35
	Chloroform	EPA 8010	ND	ug/l	0.19
	1,1,1-trichloroethane	EPA 8010	ND	ug/l	0.13
	Carbontetrachloride	EPA 8010	ND	ug/l	0.19
	1,2-Dichloroethane	EPA 8010	ND	ug/l	0.24
	Trichloroethene	EPA 8010	ND	ug/l	0.19
	1,2-Dichloropropane	EPA 8010	ND	ug/l	0.10
	Bromodichloromethane	EPA 8010	ND	ug/l	0.13
	2-Chloroethylvinylether	EPA 8010	ND	ug/l	0.25
	cis-1,3-dichloropropene	EPA 8010	ND	ug/l	0.12
	trans-1,3-dichloropropene	EPA 8010	ND	ug/l	0.20

Respectfully submitted, Vincent M. Giampa
Vincent M. Giampa, Laboratory Supervisor

A Florida Progress Company

Lab#	Parameter	Method	Results	units	MDL
102572	1,1,2-trichloroethane	EPA 8010	ND	ug/l	0.09
	tetrachloroethene	EPA 8010	ND	ug/l	0.09
	dibromochloromethane	EPA 8010	ND	ug/l	0.14
	Bromoform	EPA 8010	ND	ug/l	0.19
	1,1,2,2-tetrachloroethane	EPA 8010	ND	ug/l	0.16
	Analysis Date	EPA 8010	01/2[illegible]		0.00
	MTBE	EPA 8020	ND	ug/l	0.08
	Benzene	EPA 8020	ND	ug/l	0.13
	Toluene	EPA 8020	ND	ug/l	0.37
	Chlorobenzene	EPA 8020	ND	ug/l	0.42
	Ethylbenzene	EPA 8020	ND	ug/l	0.08
	m,p-Xylene	EPA 8020	ND	ug/l	0.09
	o-Xylene	EPA 8020	ND	ug/l	0.80
	1,3-Dichlorobenzene	EPA 8020	ND	ug/l	0.03
	1,4-Dichlorobenzene	EPA 8020	ND	ug/l	0.03
	1,2-Dichlorobenzene	EPA 8020	ND	ug/l	0.06
	Analysis Date	EPA 8020	01/28		0.00

Respectfully submitted, Vmt M G
Vincent M. Giampa, Laboratory Supervisor

Progress Environmental Laboratories

4420 Pendola Point Road
Tampa, Florida 33619
(813) 247-2005
FAX (813) 248-1537

- CERTIFICATE OF ANALYSIS -
(HRS #E84207 and FDER CompQap #900306G)

To: HSA, Inc.
Environmental and Engineering Services
4019 E. Fowler Avenue
Tampa, FL 33617

Attn: Todd Terhune

Report Date: 01/30/94

Collection Information:

Sample Date: 01/24/94
Sample Time: 1440
Sampled By : AB

PEL Lab # : 102573
Client ID : Accurate Plating;MW-5
Project ID : 2094-446
Location : Accurate Plating
Matrix : Water

ND = Less than MDL

Lab#	Parameter	Method	Results	units	MDL
102573	Dichlorofluoromethane	EPA 8010	ND	ug/l	0.45
	Chloromethane	EPA 8010	ND	ug/l	0.53
	Vinyle Chloride	EPA 8010	ND	ug/l	0.70
	Bromomethane	EPA 8010	ND	ug/l	0.38
	Chloroethane	EPA 8010	ND	ug/l	0.53
	Trichlorofluoromethane	EPA 8010	ND	ug/l	0.49
	1,1-dichloroethene	EPA 8010	ND	ug/l	0.34
	Methylene Chloride	EPA 8010	ND	ug/l	0.48
	trans-1-2-dichloroethene	EPA 8010	ND	ug/l	0.15
	1,1-Dichloroethane	EPA 8010	ND	ug/l	0.55
	Chloroform	EPA 8010	ND	ug/l	0.19
	1,1,1-trichloroethane	EPA 8010	ND	ug/l	0.12
	Carbontetrachloride	EPA 8010	ND	ug/l	0.19
	1,2-Dichloroethane	EPA 8010	ND	ug/l	0.24
	Trichloroethene	EPA 8010	ND	ug/l	0.19
	1,2 Dichloropropane	EPA 8010	ND	ug/l	0.10
	Bromodichloromethane	EPA 8010	ND	ug/l	0.13
	2-Chloroethylvinylether	EPA 8010	ND	ug/l	0.25
	cis-1,3-dichloropropene	EPA 8010	ND	ug/l	0.12
	trans-1,3-dichloropropene	EPA 8010	ND	ug/l	0.20

Respectfully submitted, [signature]
Vincent M. Giampo, Laboratory Supervisor

A Florida Progress Company

Lab#	Parameter	Method	Results	Units	MDL
102673	1,1,2-trichloroethane	EPA 8010	ND	ug/l	0.09
	tetrachloroethene	EPA 8010	ND	ug/l	0.09
	Dibromochloromethane	EPA 8010	ND	ug/l	0.14
	Bromoform	EPA 8010	ND	ug/l	0.19
	1,1,2,2-tetrachloroethane	EPA 8010	ND	ug/l	0.15
	Analysis Date	EPA 8010	01/28		0.00
	MTBE	EPA 8020	ND	ug/l	0.08
	Benzene	EPA 8020	0.47	ug/l	0.13
	Toluene	EPA 8020	ND	ug/l	0.27
	Chlorobenzene	EPA 8020	ND	ug/l	0.42
	Ethylbenzene	EPA 8020	ND	ug/l	0.08
	m,p-Xylene	EPA 8020	ND	ug/l	0.09
	o-Xylene	EPA 8020	ND	ug/l	0.80
	1,3-Dichlorobenzene	EPA 8020	ND	ug/l	0.03
	1,4-Dichlorobenzene	EPA 8020	ND	ug/l	0.03
	1,2-Dichlorobenzene	EPA 8020	ND	ug/l	0.05
	Analysis Date	EPA 8020	01/28		0.00

Respectfully submitted, VmtMG
Vincent M. Giampa, Laboratory Supervisor

Progress Environmental Laboratories
[illegible] Pendola Point Road
Tampa, Florida 33619
[illegible] 247-2005
FAX (813) 248-1537

CERTIFICATE OF ANALYSIS -
(HRS #E84207 and FDER CompQap #900306G)

To: HSA, Inc.
Environmental and Engineering Services
4[illegible] E. Fowler Avenue
Tampa, FL 33617

Attn: Todd Terhune

Report Date: 01/29/94

Collection Information:

Sample Date: 01/24/94
Sample Time: 1453
Sampled By : AB

PEL Lab # : 102674
Client ID : Accurate Placing;MW-7
Project ID : 2094-446
Location : Accurate Plating
Matrix : Water

ND = Less than MDL

Lab#	Parameter	Method	Results	units	MDL
102674	Dichlorofluoromethane	EPA 8010	ND	ug/l	0.45
	Chloromethane	EPA 8010	ND	ug/l	0.53
	Vinyle Chloride	EPA 8010	ND	ug/l	0.70
	Bromomethane	EPA 8010	ND	ug/l	0.38
	Chloroethane	EPA 8010	ND	ug/l	0.53
	Trichlorofluoromethane	EPA 8010	ND	ug/l	0.49
	1,1-dichloroethene	EPA 8010	ND	ug/l	0.34
	Methylene Chloride	EPA 8010	ND	ug/l	0.48
	trans-1-2-dichloroethene	EPA 8010	0.73	ug/l	0.15
	1,1-Dichloroethane	EPA 8010	ND	ug/l	0.55
	Chloroform	EPA 8010	ND	ug/l	0.19
	1,1,1-trichloroethane	EPA 8010	ND	ug/l	0.12
	Carbontetrachloride	EPA 8010	ND	ug/l	0.19
	1,2-Dichloroethane	EPA 8010	ND	ug/l	0.24
	Trichloroethene	EPA 8010	ND	ug/l	0.15
	1,2-Dichloropropane	EPA 8010	ND	ug/l	0.10
	Bromodichloromethane	EPA 8010	ND	ug/l	0.13
	2-Chloroethylvinylether	EPA 8010	ND	ug/l	0.25
	cis-1,3-dichloropropene	EPA 8010	ND	ug/l	0.12
	trans-1,3-dichloropropene	EPA 8010	ND	ug/l	0.20

Respectfully Submitted,
Vincent N. Ciampa, Laboratory Supervisor

A Florida Progress Company

Lab#	Parameter	Method	Results	units	MDL
102674	1,1,2-trichloroethane	EPA 8010	ND	ug/l	0.09
	tetrachloroethene	EPA 8010	ND	ug/l	0.09
	dibromochloromethane	EPA 8010	ND	ug/l	0.14
	Bromoform	EPA 8010	ND	ug/l	0.19
	1,1,2,2-tetrachloroethane	EPA 8010	ND	ug/l	0.16
	Analysis Date	EPA 8010	01/28		0.00
	MTBE	EPA 8020	ND	ug/l	0.08
	Benzene	EPA 8020	ND	ug/l	0.13
	Toluene	EPA 8020	ND	ug/l	0.27
	Chlorobenzene	EPA 8020	ND	ug/l	0.42
	Ethylbenzene	EPA 8020	ND	ug/l	0.08
	m,p-Xylene	EPA 8020	ND	ug/l	0.09
	o-Xylene	EPA 8020	ND	ug/l	0.80
	1,3-Dichlorobenzene	EPA 8020	ND	ug/l	0.03
	1,4-Dichlorobenzene	EPA 8020	ND	ug/l	0.03
	1,2-Dichlorobenzene	EPA 8020	ND	ug/l	0.06
	Analysis Date	EPA 8020	01/28		0.00

Respectfully submitted,
Vincent M. Giampa, Laboratory Supervisor

Progress Environmental Laboratories
4420 Pendola Point Road
Tampa, Florida 33619
(813) 247-4606
FAX (813) 248-1537

HSA

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME & ADDRESS
2094 446	Accurate Plating / Calumet St. Clearwater, Fl.

SAMPLERS: (Signature) [signature]

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	601/602					REMARKS
	1.24.94	15:55			MW-4	3	3					102671
	↓	15:05			MW-5	3	3					672
		14:40			MW-6	3	3					673
		14:53			MW-7	3	3					674

Results due Jan 28th

RELINQUISHED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)

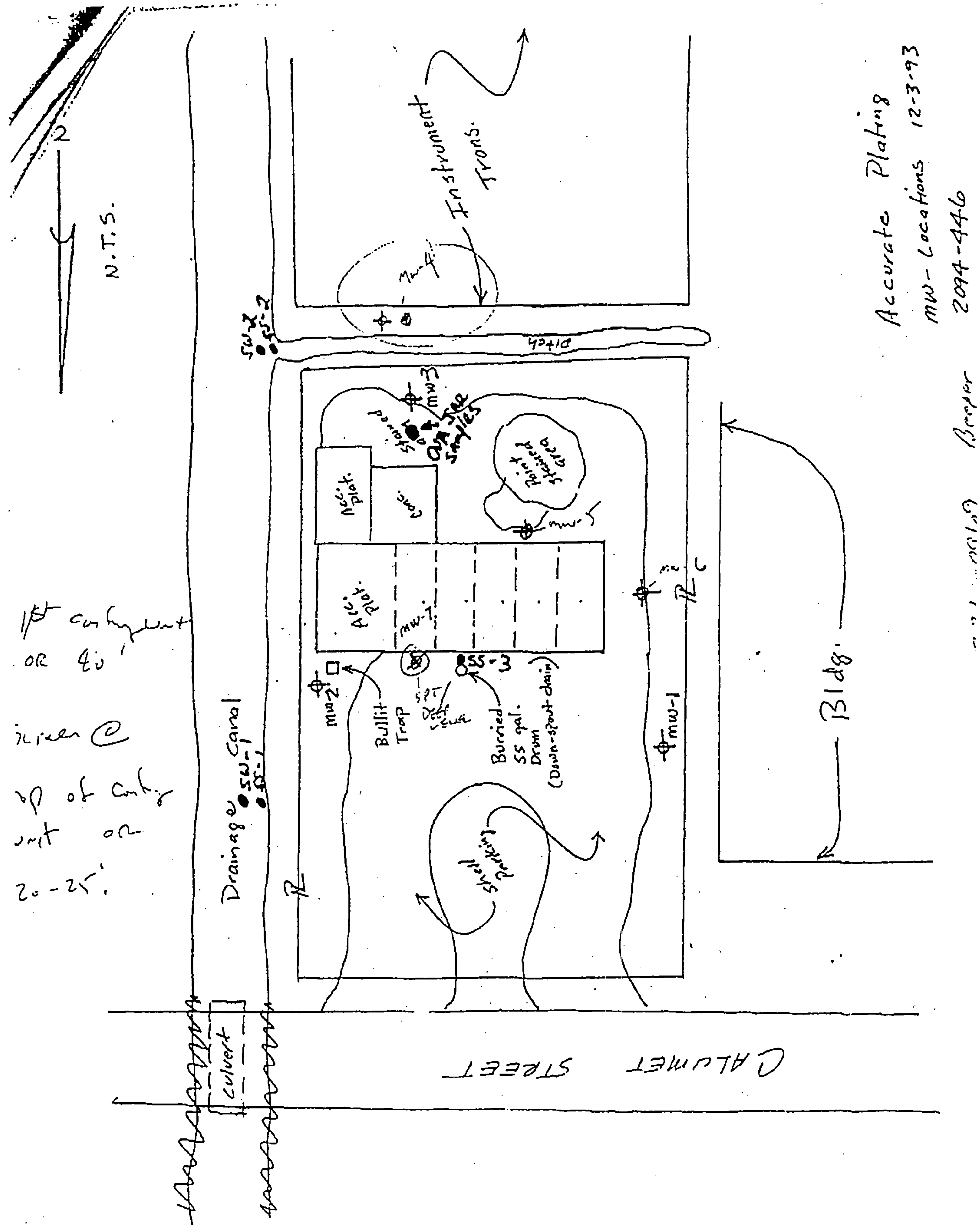
RELINQUISHED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)

RELINQUISHED BY: (Signature)	DATE / TIME	RECEIVED FOR LABORATORY BY: (Signature)	DATE / TIME	REMARKS
[signature]	1.25.94 10:12	[signature]	1-25 1015	P.M. Todd Terhune Norm. Turn a round

WHITE - Accompanies Shipment - YELLOW: To Coordinator Field Files

FEB 03 '94 10:13AM HSA/S T-SIMS/SCHEDA P.4

JAN-31-1994 13:56 FROM ELECTRIC FUELS - CAB TO



FEB 08 '94 10:42AM HSA/SCOTT-SIMS/SCHECH P.2

6/4/86 RCRA Inspection

8). *Process Description*

Accurate Plating and Weaponry, Inc. has operated a gun refinishing shop at this location for approximately nine years. The finishing process involves dismantling the guns, stripping off the old finish and then either electroplating a hardchrome, nickel, or gold finish to the piece or "Bluing" the piece by immersion within phosphoric acid based solutions. The business is operated under "job shop" conditions with all electroplating being performed on only one day of the week. The remaining time is devoted to preparing the guns for refinishing and reassembling the guns after they have been refinished.

The operation utilizes chemical stripping, cleaning and plating baths that are typical of electroplating processes. The wastes generated from these processes consist of the various rinsewaters that follow each chemical bath. According to Mr. Cogan, no chemical baths have required disposal since the operation first began nine years ago. Rinsing of the parts is accomplished by immersion into overflow rinsewater tanks and by hosing the pieces by hand and letting the rinsewater fall to the floor. On the east side of the facility, small ports have been broken through the wall to allow the discharge of these rinsewaters and floor washings to the adjacent grounds and drainage ditch. Because of the chemicals being used within the operation (i.e. cyanide stripper, chrome, nickel, etc...) a hazardous waste determination should be conducted upon the soils in the areas that receive these discharges. Inspection of the northeast discharge port did reveal a slight soil discoloration.

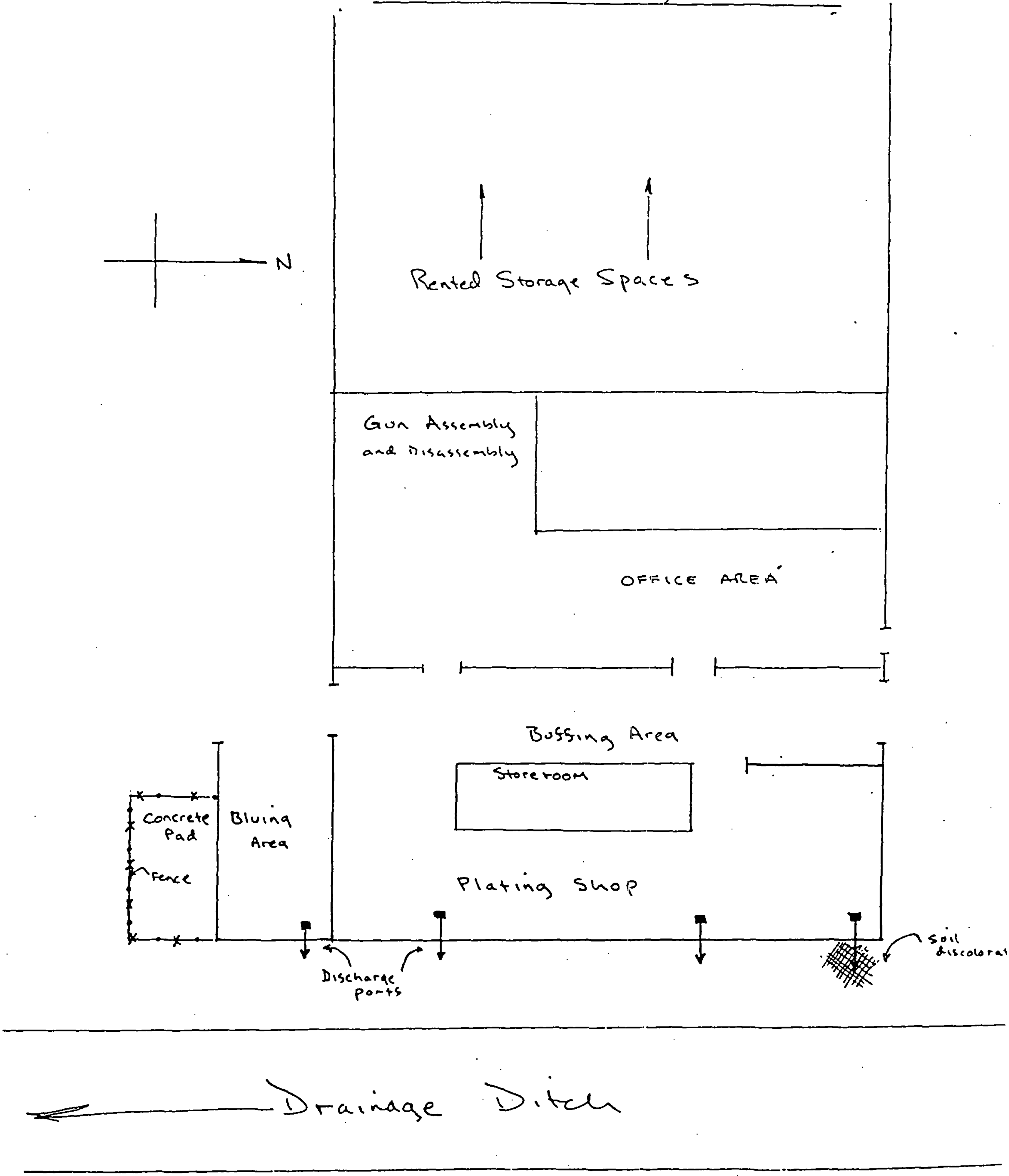
In addition to these actual discharge points there is the possibility that the soils on the southeast side of the facility may have been contaminated with a chromium plating solution. According to Mr. Cogan, a barrel of spent chrome solution was stored outside on a concrete pad in this area. Overtime, the polypropylene drum developed cracks and some of the material leaked out. Approximately one week prior to this inspection the solution was transferred to another drum and is now being stored inside of the plating shop. The material is to be used for replenishing the chrome plating bath according to Mr. Cogan. In order to verify whether the solution contaminated this area, a hazardous waste determination should be conducted on the soils adjacent to the pad.

This inspection was conducted in response to a complaint from the City of Clearwater concerning the possible discharge of pollutants to the grounds surrounding Accurate Plating. Based upon the information gathered from this inspection, it was verified that the facility is discharging untreated rinsewaters to the soils and drainage ditch located on the each side of the building.

There is also a possibility that the soils on the south side of the facility may have been contaminated from a leaking container of chromium solution. Figure I is an estimated site plan illustrating the layout of the facility and those areas that have received past discharges. In order to determine the regulatory status of these discharges, a hazardous waste determination should first be conducted upon all those areas that have received discharges. Remedial action with regards to these discharges will be dependent upon the results of this determination.

Figure I

Estimated Site Plan
Accurate Plating and Weaponry, Inc.



QORE

PROPERTY SCIENCES

December 18, 2000

Florida Department of Environmental Protection
3804 Coconut Palm Drive
Tampa, Florida 33619
QORE Project No. P8212A

Re: Contamination Assessment Report
Clearwater Top, Inc.
1937 Calumet Street
Clearwater, Pinellas County, Florida

Attention: Ms. Laura Herron, CHNM, REM
Environmental Specialist II

Dear Ms. Herron:

QORE, Inc. (QORE) is pleased to submit this Contamination Assessment Report (CAR) for the Clearwater Top facility located at 1937 Calumet Street, Clearwater, Florida (i.e. subject site). The subject site is located within Section 1, Township 29 South, Range 15 East. A site location map is included as Plate 1. This CAR was prepared in accordance with the Revised Contamination Assessment Plan (CAP) that was submitted to the Florida Department of Environmental Protection (FDEP) on July 13, 2000, which the FDEP approved in a letter to Ms. Ruth Fedorsyn, dated September 14, 2000. A copy of the September 14, 2000 CAP approval letter is included as Attachment A. The following sections present the project background, scope of work, and results of assessment activities.

PROJECT BACKGROUND

The Clearwater Top, Inc. site (i.e. subject site) is located at 1937 Calumet Street in Clearwater, Pinellas County, Florida. The southern portion of the site is occupied by a one-story concrete block building. The northern portion of the site is occupied by an unpaved parking lot. A drainage canal (approximately 15 feet wide and 10 feet deep), identified as Allans Creek, is present along the eastern property boundary of the subject site. A shallow drainage ditch (approximately 4 feet wide and 3 feet deep) is present along a portion of the southern property boundary of the subject site.

The eastern portion of the Clearwater Top building was occupied by Accurate Plating and Weaponry, Inc. (former Accurate Plating), a gun refinishing facility, from approximately 1977 to an unknown date. Based on a 1986 FDEP RCRA inspection report for the subject site, the finishing process at the former Accurate Plating facility involved dismantling the guns, chemically stripping off the old finish, rinsing the gun parts, and, then either electroplating hardchrome, nickel or gold finish to the gun parts or "Blueing" the gun piece by immersion within phospohoric acid based solutions. During the 1986 FDEP inspection, it was reported that rinsing of the parts included immersion of the parts into overflow rinse water tanks and by hosing the parts by hand and allowing the rinse water to fall to the floor. The rinse water then flowed out onto the ground surface through discharge ports located near the base of the wall on the eastern side of the building (refer to Plate 1), and slight soil discoloration near the base of the northeastern discharge port was noted in the inspection report. The 1986 FDEP inspection also reported that a polypropylene drum of spent chrome solution was previously stored outside on a concrete pad located near the southeast corner of the building. Cracks were noted in the drum and some of the solution had reportedly leaked out of the drum.

A Phase II Environmental Assessment (EA) was prepared by HSA Environmental in December 21, 1993, for the subject site and reported that elevated concentrations of tetrachloroethylene (47.57 micrograms per liter (µg/l)) and trichloroethylene (of 45.65 µg/l) were detected in a ground water sample collected from former monitor well HSAMW-3, located near the southwest corner of the subject building. No volatile organic halocarbons were reportedly detected in the ground water samples collected from monitor wells HSAMW-1 and HSAMW-2 installed to the northwest and northeast of the subject facility in 1993 (Plate 1).

According to information on file at the FDEP, four additional monitor wells (HSAMW-4, HSAMW-5, HSAMW-6 and HSAMW-7) were installed by HSA in January 1994, with the approximate locations presented on Plate 1. The analytical results for the HSA January 1994 sampling event indicate that benzene (0.47 µg/l) was detected in a ground water sample collected from monitor well HSAMW-6, and Trans 1,2 dichloroethylene (0.73 ug/l) was detected in the ground water sample collected from monitor well HSAMW-7; however, concentrations were below the MCL's of 1 ug/l and 100 ug/l, respectively, for Class G-II ground water. No analyzed compounds were detected in monitor well HSAMW-5 and no analytical results were available in the FDEP file for monitor well HSAMW-4 (located south of the drainage ditch on the southern adjacent property).

Additionally, the Phase II EA conducted by HSA indicates that one surface water and two sediment samples were collected from the drainage canal to the east of the subject site. With the exception of the metals chromium, copper, nickel, lead and zinc (all below State Cleanup Maximum Contaminant Levels (MCLs)), no other analyzed compounds, including volatile organics, were detected in the collected samples.

Directed by FDEP in January 1998, QORE attempted to collect a ground water sample from monitor well HSAMW-3 installed by HSA in 1993. QORE identified that the monitor well was plugged above the water table and that an unknown substance had apparently been poured into the well casing above the plug. Due to health and safety considerations, QORE collected a sample of the unknown liquid for laboratory analysis. The results indicate that, other than a high pH, the unknown liquid did not contain detectable concentrations of the contaminants of concern. The liquid was bailed from the monitor well and containerized for proper disposal. QORE then attempted to install a temporary monitor well adjacent to monitor well HSAMW-3 using a hand auger to complete the ground water sampling. Due to subsurface debris, QORE was unable to install the temporary monitor well.

On October 29, 1998, QORE supervised the installation of a permanent shallow monitor well, to evaluate the ground water quality beneath the site in the vicinity of monitor well HSAMW-3. The new monitor well (designated MW-7) was installed approximately six feet east of former monitor well HSAMW-3 and to a depth of approximately 13 feet below the ground surface. The descriptions of the soils encountered during the installation of the monitor well indicate that the southern portion of the site is generally underlain with a brownish gray, fine-grained silty sand from land surface to approximately 13 feet bgs. Monitor well HSAMW-3 was removed and the borehole filled to the surface with grout. On October 30, 1998, QORE collected a ground water sample from well MW-7 for laboratory analysis of volatile organic halocarbons using EPA Method 601. The results of the laboratory analysis of the ground water sample collected from MW-7 indicate the presence of cis-1,2-dichloroethylene (11,000 ug/l), tetrachloroethylene (1,700 ug/l), and trichloroethylene (580 ug/l) at concentrations above their MCLs of 70 ug/l, 3 ug/l, and 3 ug/l, respectively.

The October 1998 monitor well installation and ground water sampling activities were summarized in a letter report, "Ground Water Quality Sampling Results", submitted by QORE on February 12, 1999. The laboratory results indicate that the ground water quality in the vicinity of monitor well MW-7 (former monitor well HSAMW-3 installed by HSA) installed to the south of the subject facility has been affected by chlorinated solvent constituents at concentrations above State MCLs for Class G-II water in accordance with 62-550 F.A.C. No existing source of the solvent constituents could be identified; therefore, it is not known whether these constituents originated from past or present tenants onsite, or from offsite activities. Therefore, QORE recommended that additional assessment activities were necessary at the site to identify the source of the solvent constituents in ground water.

As stated above, a letter dated May 12, 1999 was prepared by the FDEP responding to the February 12, 1999 report summarizing the October 1998 monitor well installation and ground water sampling activities for MW-7. Subsequently, on June 9, 1999, a *Draft* Consent Order No. 99-0918 was submitted to Clearwater Top, Inc. by the FDEP, which includes a requirement to submit a CAP to address soil and groundwater resulting from the discharges. QORE submitted a CAP to the FDEP on June 24, 1999, and the FDEP responded with a comment letter on September 14, 1999. QORE submitted a CAP Response to Comments letter to the FDEP on July 13, 2000, which the FDEP approved in a letter to Ms. Ruth Fedorsyn, dated September 14, 2000.

SCOPE OF WORK

The purpose of the CA is to further evaluate the magnitude, extent and source of the previously identified chlorinated solvent-affected ground water beneath at the subject site. The scope of work at the site, as outlined in the CAP, submitted to the FDEP on June 24, 1999 and the CAP Response to Comments letter submitted to the FDEP on July 13, 2000, is outlined below.

- Construction of a scaled site map illustrating the site layout, existing monitor wells and other notable features of the site.

- Installation of up to four piezometers to evaluate the direction of ground water flow. The top of casing of the piezometers and existing monitor wells will be surveyed relative to a benchmark with an assumed datum.

- Construction of a ground water elevation map for the site using ground water elevations measured within the existing monitor wells and the newly installed piezometers.

- Collection of soil samples during the piezometer installation for field screening of volatile organic vapors using an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID).

- Collection of up to one soil samples per piezometer installed for laboratory analysis of volatile halocarbons and volatile aromatics and eight RCRA metals. If all OVA/FID readings are approximately equal to background concentrations, no soil samples will be submitted for laboratory analysis.

- Collection of a surface water sample (if present) and a sediment sample from the drainage canal east of the facility in the location where samples had been previously collected by HSA, for analysis of volatile aromatics.

- Collection of a surface water (if present) and a sediment sample from the south ditch for laboratory analysis of volatile halocarbons and volatile aromatics and the eight RCRA metals.

- Installation of a deep soil boring upgradient of the source area to the base of the surficial aquifer, with continuous split spoon samples collected to determine the lithology at the site. Soil samples will be collected from the soil boring and screened using an OVA/FID.

- Collection of discrete soil samples at 1-foot depth intervals from the ground surface to the water table adjacent to each of the four former wastewater discharge ports. The soil samples will be screened using an OVA/FID, with submission of a soil sample from each soil boring location for analysis of volatile aromatics and volatile halocarbons and eight RCRA metals.

- Installation of additional monitor wells at the site to define the extent of affected ground water at the site. The number of wells and their construction is to be determined after the ground water flow evaluation is completed and the site lithology is determined. The well location information will be submitted to the FDEP.

- OVA/FID screening of soil samples collected at five foot intervals during the monitor well installation activities.

- Installation of a double cased deep vertical extent well to characterize the vertical extent of affected ground water near MW-7.

- Collection of ground water samples from the existing on-site wells and the newly installed monitor wells for laboratory analysis of volatile halocarbons and volatile aromatics. Collection of ground water from the deep vertical extent well for laboratory analysis of volatile halocarbons, volatile aromatics, and the eight RCRA metals.

- Conduct a well survey to identify any public supply wells or private supply wells within a ½ mile radius of the site.

- Incorporate the list of property owners and/or tenants who have occupied the facility within the last 20 years, as provided by the property owner.

- Provide the locations of all storm sewers, inlets, and sanitary sewers on or near the property on the site diagram.

- Preparation and submission of a CAR based on the results of the assessment activities outlined above.

The results of the investigations are discussed in subsequent sections of this report. Any modifications to the proposed scope of work are discussed below.

REGIONAL GEOLOGY AND HYDROGEOLOGY

According to Heath and Smith (l954), Ryder (1985), Causseaux (1985), Gilboy (l985), SWFWMD (1988), and Scott (1988), Pinellas County is located on a peninsula separating Tampa Bay from the Gulf of Mexico and is characterized by gently sloping Pleistocene marine terraces overlying the carbonate Florida Platform. The county is divided into hilly uplands dominated by the Pinellas Ridge in the north central portion and flat uplands and level lowlands in the southern and coastal areas of Pinellas County. The site location is on the coastal Pamlico Terrace in northern Pinellas County. The Soil Survey of Pinellas County (Vanatta, 1972) indicates that the site is located in an area mapped as "Urban Land-Astatula complex." This complex is about 30 to 70 percent Astatula fine sand, of which 10 to 20 percent has been modified by cutting, grading, and shaping. About 25 to 40 percent is Urban land.

The surficial aquifer ranges in thickness from less than 20 feet in the north central portion of the county, to 90 feet in the southern portion of Pinellas County. The thickness of the surficial aquifer at the site ranges from approximately 20 to 50 feet (Causseaux, 1985). The surficial aquifer is separated from the underlying Upper Floridan by the Hawthorne Group. Low permeability units within the Hawthorne Group act as a confining layer for the Upper Floridan and the thickness of the confining layer ranges from less than 25 feet in the north to about 100 feet in southern Pinellas County.

The undifferentiated Hawthorne Group, the Arcadia formation, and the Tampa member of the Arcadia formation make up the Hawthorne Group in the Clearwater Area (Florida Geological Survey Publication " The lithostratigraphy of the Hawthorne Group in Florida", 1988). The thickness of the undifferentiated Hawthorne unit within the area of the site is unknown; however, to the south it ranges in thickness from 10 feet to 50 feet. The Arcadia formation, including the Tampa member, is up to 100 feet thick in the area and consists of primarily limestone and dolostone with varying amounts of quartz sand, clay, and phosphatic grains (Heath and Smith, 1954).

The Hawthorn Group has a diverse lithology, consisting of quartz sand, phosphorite, clay, marl, dolosilt, dolostone, and limestone, reflecting the variety of depositional environments which occurred during the Miocene Epoch (Gilboy 1985 and Scott 1988). Small grains of black and brownish phosphate and angular fragments of chert are irregularly distributed throughout the group (Heath and Smith, 1954)

SWFWMD (1988) reports that the transmissivity (hydraulic conductivity times aquifer thickness) of the surficial aquifer ranges from approximately 300 feet squared per day (ft^2/day) for the fine-grained, well-sorted sands to several thousand ft^2/day for the shelly sand. This corresponds to a hydraulic conductivity of 6 to 12 feet per day. The specific yield for the surficial aquifer is reported to range from less than 0.1 to 0.3 and averages approximately 0.2. According to SWFWMD (1988), this aquifer is classified as a G-II aquifer and has limited use as a supplemental or alternative source of water for public, industrial, or agricultural supply. Water from the surficial aquifer in Pinellas County is presently used for rural domestic and livestock supply, lawn irrigation, and for heating and air conditioning.

SWFWMD (1988) reports from an average of five aquifer tests that transmissivity values range from 33,422 ft^2/day to 1,203,209 ft^2/day in the upper Floridan aquifer and storativity ranges from 2×10^{-4} to 8×10^{-3} in the upper Floridan aquifer. The thickness of the Floridan ranges from less than 1,000 feet in northern Pinellas County to more than 1,200 feet in the south (SWFWMD, 1988). The most productive zones of the upper Floridan aquifer are in the Tampa Member and Suwannee Limestone (Hickey, 1982). The Tampa Member of the Arcadia Formation (Hawthorn Group; Scott, 1988) is of Early Miocene age and consists mainly of hard, sandy, fossiliferous limestone. It is approximately 150 feet thick in central Pinellas County (Heath, 1954).

SWFWMD (1988) reports total dissolved solid concentrations from the Floridan aquifer in central Pinellas County to range from 1,336 mg/L to 5,990 mg/L, which would indicate a G-II aquifer classification. However, the Florida Primary Drinking Water Standard for total dissolved solids is 250 mg/L. Therefore, water from the Floridan aquifer in central Pinellas County is expected to be non-potable. Mineralization of groundwater generally increases with depth and toward the coast. SWFWMD (1988) reports that the lower Floridan contains no potable water in southern Pinellas County.

Groundwater use from the upper Floridan aquifer in Pinellas County is limited due to the small amount of good quality water available and the sensitivity of the aquifer to saltwater encroachment. Only ten percent of the total Pinellas County public water supply is withdrawn from within Pinellas County. The remainder is imported from adjacent counties (Stieglitz, 1988). SWFWMD (1988) reports that water produced from the upper Floridan aquifer in Pinellas County is used for municipal supply; agricultural and industrial uses are minor.

ASSESSMENT ACTIVITIES

Field Activities

Piezometer Installation

A total of two piezometers were installed at the site on October 30, 2000. The two piezometers were installed at strategic locations to ensure that the ground water flow pattern at the site could be characterized. The piezometer locations are presented on Plate 2. Each piezometer was installed using a steel hand auger to approximate depths ranging between five and seven feet below ground surface (bgs). The top of each piezometer was completed with a PVC riser approximately one-half to two feet above land surface. Each piezometer was constructed of two inch diameter Schedule 40 PVC screen (slotted at 0.010-inch) and casing. Soil cuttings were used as backfill. Piezometer construction logs are included in Attachment B.

Soil samples were collected at one foot intervals from the ground surface to the water table during the piezometer installation with OVA screening of the collected soil samples using an OVA/FID.

Specifically, at each sample depth, two 16-ounce jars were half-filled with soil and the top sealed with aluminum foil. The headspace in each jar was then screened using the OVA. The soil headspace in the first sample jar at each location was screened using the OVA to measure the concentration of total volatile organic vapors, while the soil headspace in the second sample jar was screened using the OVA equipped with a in-line charcoal filter to provide a reading of the concentration of methane and ethane. The concentration of methane and ethane was subtracted from the concentration of total volatile organic vapors.

Organic vapor screening results are summarized in Table 1. Corrected volatile organic vapor readings were all below detection limits in the soil samples collected from PZ-1 and PZ-2, therefore, there were no soil samples from the piezometer installation submitted for laboratory analysis of volatile halocarbons, volatile aromatics, and the eight RCRA metals.

A scaled site map, illustrating the site layout, existing monitor wells, any identified utilities, and other notable features of the site, was also constructed during the site visit on October 30, 2000 (Plate 2).

Ground Water Flow Evaluation

Water levels in the piezometers and existing monitor wells were measured on October 30, 2000, to the nearest 0.01 foot using an electronic water level indicator, and the top of casing of each piezometer and monitor well was surveyed to an arbitrary datum. The water elevation in the east ditch was also measured by surveying in a marked point on the concrete top of the north culvert and then measuring the water elevation within the ditch from this point down. The existing monitor well MW-7 could not be surveyed as a large truck was parked over the monitor well, which could not be moved. The October 30, 2000 and November 3, 2000 ground water elevation data are summarized in Table 2, with the November 3, 2000 ground water data within the surficial aquifer presented graphically on Plate 3.

The ground water elevation data collected from the monitor wells and piezometers indicate that generally the ground water flow within the surficial aquifer is towards the east at the site, towards the drainage ditch running along the eastern side of the site.

Ground water elevations for the existing on-site wells and the newly installed wells, MW-8 and MW-9, on November 29, 2000, are also shown on Table 2. The ground water flow pattern for the November 29, 2000 monitoring data was comparable to the ground water flow pattern measured on November 3, 2000, with ground water flow within the surficial aquifer towards the east.

Sediment and Surface Water Sampling

On October 30, 2000, a surface water and a sediment sample (S-2) were each collected from the drainage canal east of the facility in the location where HSA previously collected surface water and sediment samples on December 21, 1983 (Plate 2). The surface water sample and sediment sample (S-2) were sent to STL Tampa West for analysis of volatile aromatics using EPA Method 602/8021.

The ditch that was assumed to be present along the southern side of the property was only a small swale and there was no water present within the swale. Therefore, QORE was not able to collect a surface water sample from this location; however, a sediment sample was collected from the south ditch (S-1) at the location shown on Plate 2, and submitted for analysis of volatile halocarbons and volatile aromatics using EPA method 8021 and the eight RCRA metals. An equipment blank (EB-1) was also collected.

Soil Boring Installation

Based on the ground water flow pattern at the site determined from the October 30, 2000 water elevations, soil boring (B-1) was installed on November 3, 2000 near the northwestern corner of the building, upgradient of the source area at MW-7. The soil boring was installed to further characterize the site lithology for the purpose of evaluating contaminant migration pathways beneath the site. The soil boring was installed using a hollow stem auger drill rig with continuous split spoon sampling from land surface to a depth of 18 feet, with the confining Hawthorne Clay unit encountered at a depth of 16 feet below ground surface (bgs). The soil boring log is shown in Attachment B. The soil boring was terminated at the base of the surficial aquifer as originally proposed and grouted to the surface. All cuttings generated during the installation of the soil boring were drummed for future disposal.

Soil samples were collected at one to two foot intervals from the ground surface to the base of the boring during the installation of the soil boring with screening of the collected soil samples for organic vapors using an OVA/FID, as described previously.

Organic vapor screening results are summarized in Table 1. Corrected volatile organic vapor readings were all below detection limits in the soil samples collected from soil boring B-1 from the ground surface to a depth of 14 feet bgs. Corrected OVA concentrations of 23 ppm were detected at a depth of 15 feet and concentrations of 46 ppm were detected at a depth of 16 feet bgs. OVA concentrations were below detection limits with soil samples collected from a depth of 17 and 18 feet bgs within B-1.

Discharge Port Sampling

On November 3, 2000, QORE collected a discrete soil sample adjacent to each of the four former wastewater discharge ports that were previously identified. Soil samples were collected from each location at one-foot depth intervals from the ground surface to the water table and each sample was screened on-site using an OVA/FID. A cracked and broken 1 foot thick concrete slab was present along the northeastern corner of the building, which was cored through to retrieve the soil samples. At a depth of approximately four feet a concrete slab was encountered below soil boring locations B-2 and B-3.

Organic vapor screening results are summarized in Table 1. A total organic vapor reading of 30 ppm was detected at a depth of four feet within B-2; however, this was mostly due to the methane within the sample of 28 ppm. Corrected volatile organic vapor readings were below detection limits within soil collected from borings B-3, B-4, and B-5. Based on the elevated methane concentrations, and the concrete slab present at boring locations B-2 and B-3, it is assumed that an old septic tank is located along the northeastern side of the building, between the building and the eastern ditch.

As the corrected OVA/FID readings were all at background levels or below detection limits, a surficial soil sample was collected from 0-1 foot depth at each of the soil boring locations. Where the concrete slab was present at boring location B-2 and B-3, the soil samples were collected from a depth of one foot, just below the broken edge of the concrete slab. An equipment blank EB-2 was also collected. The soil samples were submitted to the laboratory for analysis of volatile aromatics and volatile halocarbons using EPA Method 8021 and analysis for the eight RCRA metals.

Well Installation and Soil Sampling

On November 9, 2000, QORE provided the Florida Department of Environmental Protection (FDEP) with the lithologic results of the soil boring and a total of three proposed monitor well locations. The letter report to the FDEP is included as Attachment C. The proposed monitor well locations included one at the northeast corner of the building near the former monitor well HSAMW-2, one at the southwest corner of the subject site, near the location of the drum storage at the adjacent building, and one at the far southeast corner of the property, to the east of monitor well MW-7. The deep well vertical extent monitor well was not proposed at the site, due to the presence of the Hawthorne unit encountered at a depth of only 16 feet within the soil boring B-1.

On November 15, 2000, QORE supervised the installation of shallow monitor wells MW-8 and MW-9, which were installed to a depth of 16 feet and 15 feet respectively, using a hollow stem auger drill rig by Huss Drilling, Inc. The monitor well locations are shown on Plate 2. The proposed well located to the east of monitor well MW-7 could not be installed due to the truck parked at the southeast side of the property and the debris at this location. A soil boring (B-6) was also installed immediately downgradient of the adjacent drum storage area where the curb is broken.

The monitor wells were constructed of 2-inch diameter, Schedule 40 PVC with a 10-foot screened section slotted at 0.010 inch. At each well, the annular space around the PVC pipe was filled with a 20/30 grade silica sand, followed by a fine sand seal and grout. The well was completed with an 8-inch diameter protective steel manhole installed within a 2' X 2' concrete pad and a locking water-tight cap. Subsequent to installation of the monitor wells, the wells were developed by over pumping to remove fine-grained sediments. The monitor well construction logs are included in Attachment B. Development water was drummed for future disposal. The top of casing of each monitor well was surveyed to the existing monitor wells.

Soil samples were collected at five foot intervals from the ground surface to a depth of 16 to 17 feet during the installation of the two monitor wells and every foot at the soil boring B-6. As described above, the headspace of the soil samples were screened for the presence of volatile organic vapors using an OVA equipped with a FID in accordance with Chapter 62-770 F.A.C.

Organic vapor screening results are summarized in Table 1. Corrected volatile organic vapor readings of 10 ppm and 28 ppm were detected at a depth of 8 feet and 14 feet in soil from monitor well MW-8. Soil samples could not be collected from within the upper seven feet at MW-8 due to large gravel fragments and rubble present within the top three to four feet. A large rock was encountered at approximately five feet depth and there was no recovery below the rock until the eight foot depth. Corrected volatile organic vapor concentrations were below detection limits at 16 and 17 feet at MW-8. Corrected volatile organic vapor concentrations of 390 ppm and 85 ppm were detected in soil from the location of monitor well MW-9 at the 3 and 5 foot depth respectively. Organic vapor concentrations then dropped off to below detection limits from 10 feet to the base of the hole at 16 feet at MW-9. Corrected volatile organic vapor readings of 66 were detected at a depth of five feet within soil collected from B-6, which was installed immediately adjacent to monitor well MW-9. A soil sample was, therefore, collected from a depth of three to four feet within B-6 and sent to the laboratory for analysis of volatile aromatics and volatile halocarbons using EPA method 8021.

Ground Water Sampling and Analysis

On November 29, 2000, ground water samples were collected from monitor wells HSAMW-4, HSAMW-5, MHSAMW-7, MW-7, MW-8, and MW-9 for ground water quality analysis. All samples were collected in accordance with QORE's FDEP approved Comprehensive Quality Assurance Plan (No. 990065). Monitor well purge forms are included in Attachment D. All of the collected ground water samples were submitted to STL Tampa West, for analysis of volatile aromatics and volatile halocarbons using EPA Method 8021. In accordance with QORE's FDEP approved ComQAP, one duplicate ground water sample (identified as Dupe-1) was collected at MW-7, and an equipment blank was collected for volatile aromatics and volatile halocarbon analysis using EPA Method 8021. All purge water was drummed for proper disposal.

Former Tenants

A list of the former tenants that could be compiled by the property owner Ms. Ruth Fedorsyn will be provided to the FDEP under separate cover.

Results

Site Lithology

The soil lithology encountered at the site consists of a brown to gray sand unit with varying amounts of silt and clay, which was present from the ground surface to a depth of 15.5 to 16 feet. Large gravel fragments and rubble were present within the top four to six feet at the monitor well locations MW-8 and MW-9 and within the soil borings B-2 and B-3. A clay unit with some sand was present at a depth of five to six feet in soil boring B-1, and a clayey sand was also present at a depth of 8 to 15.5 feet at MW-8 and at a depth of 11 to 12 feet within B-1. A pale olive colored very stiff clay unit, which appeared to be the undifferentiated Hawthorne unit was encountered at a depth of 15.5 to 16.5 feet below ground surface within the soil boring and the monitor wells MW-8 and MW-9.

Soil Laboratory Results

Volatile aromatics and volatile halocarbons concentrations were all below detection limits and therefore, below the State Cleanup Target Levels, which were used for reference only, within the four soil samples collected from a depth of one foot bgs at the discharge port sampling locations. The analytical results are listed in Table 3, and the report of results from STL Tampa West is included in Attachment E.

The soil samples from below the discharge ports were also analyzed for the 8 RCRA metals arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury. The laboratory results are listed in Table 4, and the report of results from STL Tampa West is included in Attachment E. The metals barium, chromium, lead, and mercury were detected within the soil samples B-2 (one foot), B-3 (one foot), B-4 (one foot), and B-5 (one foot) at concentrations above detection limits, but at concentrations below the Industrial and/or leachability SCTLs (used for reference only). Total chromium concentrations in soil at B-2 (one foot) were above the leachability SCTL, however the SCTL is based on hexavalent chromium, which should be a portion of the total chromium present. Volatile halocarbons, volatile aromatics, and the eight RCRA metals were not detected above laboratory detection limits in QORE's Quality Control (QC) equipment blank (EB-2), indicating that proper sampling and handling procedures were employed.

Volatile aromatics and volatile halocarbons concentrations were also all below detection limits, and therefore, below the Industrial and Leachability State Cleanup Target Levels (used for reference), within soil sample B-7 (three to four feet), which was located adjacent to monitor well MW-9. The metals arsenic, barium, chromium, and lead were also detected in soil sample B-7 (three to four feet); however, concentrations were all well below the Industrial and Leachability SCTLs, (used for reference).

Sediment and Surface Water Sampling Laboratory Results

Sediment sample S-2, which was collected from within the east ditch at the same location where HSA had previously collected a sediment sample, had volatile aromatic and volatile halocarbon concentrations all below detection limits and, therefore, below the Industrial and Leachability State Cleanup Target Levels (used for reference). The metals barium, chromium, and lead were detected in sediment sample S-1; however, concentrations were below the Industrial and Leachability SCTls (used for reference). The laboratory results are shown in Table 3.

Volatile aromatic concentrations with sediment sample S-1, collected from within the swale located along the southern edge of the property, were also below laboratory detection limits and the Industrial and Leachability SCTLs, used for reference only.

The surface water sample collected from the east ditch had BTEX and MTBE concentrations below the laboratory detection limits (Table 5). Benzene is the only volatile aromatic compound tested that had a Class III surface water criteria of (<71.28), which means benzene concentrations in surface water must be less than 71.28 at average annual flow conditions. The benzene concentrations were below detection limits and also below the Surface Water Criteria.

Volatile halocarbons, volatile aromatics, and the eight RCRA metals were not detected above laboratory detection limits in QORE's Quality Control (QC) equipment blank (EB-1) indicating that proper sampling and handling procedures were employed.

Ground Water Laboratory Results

A copy of the report of results from STL Tampa West in included in Attachment E and the ground water results are summarized on Table 6.

Ground water from monitor well MW-7 had several detections of volatile halocarbons that were elevated above the Primary and Secondary Drinking Water MCLs. Ground water at monitor well MW-7 had detections of cis, 1,2 – Dichloroethylene (4,200 µg/l), tetrachloroethylene (300 µg/l), Trichloroethylene (170 µg/l), and vinyl chloride (4.8 µg/l), which were above the Primary and Secondary Drinking Water MCLs. Chlorobenzene, 1,2 – Dichlorobenzene, 1,4-Dichlorobenzene, 1,1 –Dichloroethane, 1,1-Dichloroethylene, and trans-1,2-Dichloroethylene were also detected in ground water at MW-7; however, concentrations were below the MCLs. The volatile aromatics toluene (2.8 µg/l) and total xylenes (1.2 µg/l) were also detected in ground water at MW-7; however, concentrations were below the MCLs.

Ground water at adjacent monitor well HSAMW-4 had detections of cis-1,2 – Dichloroethylene (cis-DCE) of 1,000 µg/l and tetrachloroethylene (PCE) of 3.2 µg/l, which were above the MCLs of 70 µg/l and 3 µg/l, respectively. Chlorobenzene, 1,2 –Dichlorobenzene, 1,4-Dichlorobenzene, and trans-1,2-Dichloroethylene (trans-DCE) were also detected in ground water at HSAMW-4; however, concentrations were below the MCLs. Volatile aromatics were not detected above the laboratory detection limits in ground water form HSAMW-4.

The volatile halocarbons bromodichloromethane (1.4 µg/l) and chloroform (10 µg/l) were detected in ground water from monitor well MW-8, at concentrations slightly above the state carcinogen, organoleptic, and systemic toxicants which are used for reference only. No other volatile halocarbons or volatile aromatics were detected in ground water at MW-8 at concentrations above the laboratory detection limits.

The volatile halocarbons chloroform, 1,1-Dichloroethane (1,1-DCA), and 1,1-Dichloroethylene (1,1-DCE) were detected in ground water from monitor well MW-9, located at the far southwestern corner of the property at concentrations below the MCLs. Voaltile aromatic concentrations in ground water at MW-9 were all below the MCLs.

There were no aromatic or volatile halocarbon detections in ground water above the laboratory detection limits from monitor well HSAMW-5.

The duplicate sample (dupe-1) of MW-7 was acceptable with percent differences of 0 to 91 % difference (calculated as the difference of the percentage of the mean) which are within the acceptable limits for duplicate analysis for the detected parameters (Table 1020:I, Standard Methods for the Examination of Water and Wastewater, 1989). Additionally, no volatile halocarbons or volatile aromatics were detected above laboratory detection limits in QORE's Quality Control (QC) equipment blank (EB-1) indicating that proper sampling and handling procedures were employed.

Potable Well Inventory

Based on the Southwest Florida Water Management District (SWFWMD) Permits Issued Report dated December 12, 2000, and the City of Clearwater Records, a total of two public supply wells and 20 irrigation wells were identified within a ½-mile radius of the site. The City of Clearwater potable wells are located to the north of the property, with the closest well located approximately 1500 feet to the northeast. The City of Clearwater potable wells are all cased to a depth of at least 83 feet, and are screened to approximately 185 to 300 feet based on a discussion with the City of Clearwater. The public supply wells and irrigation wells are listed in Table 7 and the well locations are presented on Plate 5.

Based on the easterly direction of ground water flow measured in the surficial aquifer at the site on November 3, 2000, there are no potable wells located directly downgradient of the site. The majority of the wells within the area are irrigation wells that are cased to a depth of 40 to 160 feet. There are several irrigation wells located downgradient of the site along Calumet and N Hercules, which are the closest wells to the subject site. These four irrigation wells are cased from a depth of 40 to 100 feet bgs, with a total well depth of 180 feet for all four wells.

Discussion

Total chromium concentrations were slightly elevated above the Leachability SCTL for hexavalent chromium, which was used for reference only, at a depth of one foot below the concrete slab at soil boring B-2. The SCTL is for the hexavalent chromium concentration, rather than the total chromium concentration. Hexavalent chromium is also present in cement, and the soil sample collected beneath the broken concrete may have contained some broken or powdered cement material. The remaining soil samples collected from below the discharge ports and at the southwest corner of the site did not have any metal concentrations above the SCTLs.

There was no evidence of soil impacted by chlorinated solvents above detection limits and, therefore, above the SCTLs (used for reference only) within soil samples collected from beneath the four discharge ports along the eastern side of the building and at the southwestern side of the site close to the drum storage at the adjacent building. Organic vapor concentrations were also below detection limits within most of the soil samples that were screened at the site and, even when the total organic vapor concentrations were elevated, the methane component was quite large indicating that the organic content of the soils is likely quite high.

There were no volatile aromatics or volatile halocarbons detected within the sediment sample collected from within the swale located along the southern side of the site, and no volatile aromatics detected within the sediment sample collected from within the eastern ditch. The eight RCRA metal concentrations within the sediment from the south ditch were also all below the SCTLs (used for reference only). Previous testing by HSA had shown that volatile halocarbons and the eight RCRA metals were below the SCTLs within a soil sample collected from the eastern ditch at the same location. Volatile halocarbons are soluble and it would be unexpected to find them in a sediment sample within the ditch unless there is a continuous discharge through the sediments, metals however, readily bind to soils and sediment and generally have a low solubility in water.

Previous ground water sampling in 1993 had identified the presence of tetrachloroethylene (PCE) and trichloroethylene (TCE) in ground water at concentrations above the MCLs at the former monitor well HSAMW-3, located along the southern side of the site. After the installation of monitor well MW-7, immediately adjacent to this location, ground water sampling in 1998 again showed elevated concentrations of PCE and TCE, along with a breakdown product of PCE and TCE of cis-1,2-dichloroethylene or cis-DCE. The November, 2000, ground water sampling and analysis identified PCE, TCE, and cis-DCE at lower concentrations than those detected in 1998. However, vinyl chloride was also detected in ground water from monitor well MW-7. Vinyl chloride is a breakdown product of TCE and PCE that has a very low MCL of 1μg/l in ground water.

There was a previous detection of Trans 1,2 dichloroethylene (trans-DCE) in 1994 within monitor well HSAMW-7 at a concentration below the MCL. The November, 2000, ground water sampling did not identify any dissolved chlorinated solvents in ground water at monitor well HSAMW-7 above the detection limits. Detected concentrations were below the MCLs.

Chlorinated solvents undergo biodegradation through three pathways: (1) use as an electron acceptor (reductive dechlorination); (2) use as an electron donor (primary substrate); and cometabolism. The most important process for the natural biodegradation of chlorinated solvents is reductive dechlorination, where the chlorinated solvent utilized as an electron acceptor and a chlorine atom is removed and replaced with a hydrogen atom. An appropriate carbon source is also required for microbial growth to occur. The highest rates of reductive dechlorination occur under methanogenic conditions, which occur under anaerobic conditions. As an example, during reductive dechlorination, tetrachlorethylene or PCE is reduced to TCE, and then to any of the three dichloroethylenes, and to vinyl chloride, and then to ethylene and finally to ethane.

The presence of elevated cis-DCE concentrations at the site in relation to PCE and TCE concentrations indicates that the chlorinated solvents at the site are likely undergoing some natural biodegradation and the chlorinated solvents have likely been present for some time. The high methane concentrations at several locations at the site also point towards a high carbon source at these locations which can assist in reductive dechlorination by providing a carbon source and by contributing to anaerobic conditions within the ground water.

The ground water flow pattern within the surficial aquifer is to the east towards the ditch located on the east side of the site. There was no evidence of any volatile aromatics detected in surface water directly downgradient of the impact detected at monitor well MW-7. Previous sampling by HSA at the same location did not show any impact from volatile halocarbons or metals.

The volatile aromatic 1,4-Dichlorobenzene was also detected in ground water at monitor well MW-7; however, concentrations were well below the MCLs. The major source of 1,4 Dichlorobenzene is from use in toilet bowl deodorants, garbage deodorants and moth flakes. The presence of 1,4-Dichlorobenzene at the site is unexplained and may be associated with the on-site septic tank or from the on-site bathroom.

The current property manager at the subject site has verbally identified that the adjacent property to the southwest had excavated the soils in the area where they currently have a drum storage area (Plate 2). This area was then paved with a concrete curb for the current drum storage. The property owner was told that petroleum impact was present. The concrete curb is broken and there is evidence that some material is washed there, which may run onto the subject site. The former monitor well HSAMW-6, located on the western side of the property, had a benzene detection in ground water, when previously sampled in 1994. However, the new monitor well MW-9, which was installed downgradient of the drum storage area showed no evidence of ground water impacts above the MCLs, although there were detections in ground water (below the MCLs) of the clorinated solvents 1,1-DCA, 1,1-DCE, and the breakdown product chloroform. These detections are present upgradient of the impact detected at MW-7.

The ground water flow within the surficial aquifer is towards the east. There were no potable wells located downgradient of the site to the east. The closest potable well is located a distance of approximately 1500 feet to the northeast of the site.

SUMMARY AND CONCLUSIONS

Based on the results of the CA activities performed at the subject site the following summary and conclusions are presented:

- The surficial aquifer at the site consists of a brown to gray sand unit with varying amounts of silt and clay and was present to a depth of 15.5 to 16 feet, at which depth the undifferentiated Hawthorne unit was encountered.

- Volatile aromatics and volatile halocarbons were not detected above the SCTLs (used for reference only) within any of the soil samples collected from below the discharge ports, from the southwestern side of the site, or from the sediment sample collected from the south ditch.

- *Volatile aromatic concentrations were also below detection limits from the sediment* sample collected from the east ditch.

- The eight RCRA metals were all below the Industrial and Leachability SCTLs (used for reference only) within the soil samples collected from below the discharge ports, from the southwestern corner of the site, and from the sediment sample collected from the south ditch, with the exception of total chromium concentrations at B-2 (one foot). The criteria, however, is based on hexavalent chromium concentrations.

- Ground water was impacted at monitor well MW-7, with concentrations of PCE, TCE, cis-DCE, and vinyl chloride elevated above the MCLs. Ground water was also impacted at adjacent well HSAMW-4 with concentrations of cis-DCE and PCE elevated above the MCLs.

- The presence of biodegradation products of PCE and TCE, such as cis-DCE, and vinyl chloride indicates that the chlorinated solvents at the site are likely undergoing some natural biodegradation.

- The high methane concentrations detected in soils at several locations at the site also point towards a high carbon source, which can assist in reductive dechlorination by providing a carbon source and by contributing to anaerobic conditions within the ground water.

- Although the ground water flow within the surficial aquifer is easterly, towards the ditch located on the east side of the site, there was no evidence of any volatile aromatics detected in surface water directly downgradient of the impact detected at monitor well MW-7. Previous sampling by HSA at the same location did not show any impact from volatile halocarbons or metals.

- The chlorined solvents solvents 1,1-DCA, 1,1-DCE, were detected below the MCLs at the far southwestern corner of the site in ground water at MW-9, downgradient of the adjacent drum storage. The concrete curb for the drum storage is broken and there is evidence that some material is washed there, which may run onto the subject site.

- Two potable wells were identified within a ½-mile radius of the site, with the closest well located approximately 1500 feet to the north, north-east. Ground water flow within the surficial aquifer is to the east. There were no potable wells located downgradient to the east of the site.

* * * *

If you have any questions, please contact us at 813-623-6646.

Sincerely,
QORE, INC.

Christine McKenzie
Project Hyrogeologist

12-18-00
Jonathan E. Hull, P.G.
Principal Consultant

TABLE 1: SOIL SCREENING SUMMARY

Clearwater Top

SAMPLE			OVA SCREENING RESULTS			
BORING NO.	DATE COLLECTED	SAMPLE INTERVAL (FBLS)	TOTAL READING (ppm)	CARBON FILTERED (ppm)	NET READING (ppm)	COMMENTS
PZ-1	30-Oct-00	1	0	0	0	
PZ-1	30-Oct-00	2	0	0	0	
PZ-1	30-Oct-00	3	0	0	0	
PZ-1	30-Oct-00	4	0	0	0	
PZ-2	30-Oct-00	1	0	0	0	
PZ-2	30-Oct-00	2	0	0	0	
PZ-2	30-Oct-00	3	0	0	0	
PZ-2	30-Oct-00	4	0	0	0	
PZ-2	30-Oct-00	5	0	0	0	
B-1	3-Nov-00	3	0	0	0	
B-1	3-Nov-00	4	0	0	0	
B-1	3-Nov-00	6	0	0	0	
B-1	3-Nov-00	8	0	0	0	
B-1	3-Nov-00	9	0	0	0	
B-1	3-Nov-00	10	0	0	0	
B-1	3-Nov-00	11	0	0	0	
B-1	3-Nov-00	12	0	0	0	
B-1	3-Nov-00	13	0	0	0	
B-1	3-Nov-00	14	0	0	0	
B-1	3-Nov-00	15	30	6.8	23.2	
B-1	3-Nov-00	16	54	7.4	46.6	
B-1	3-Nov-00	17	0	0	0	
B-1	3-Nov-00	18	8.4	20	0	
B-2	3-Nov-00	0-1	0	0	0	
B-2	3-Nov-00	2	0	0	0	
B-2	3-Nov-00	3	0	0	0	
B-2	3-Nov-00	4	30	28	2	
B-3	3-Nov-00	0-1	0	0	0	
B-3	3-Nov-00	2	0	0	0	
B-3	3-Nov-00	3	0	0	0	
B-3	3-Nov-00	4	0	0	0	
B-4	3-Nov-00	0-1	0	0	0	
B-4	3-Nov-00	2	0	0	0	
B-4	3-Nov-00	3	0	0	0	
B-4	3-Nov-00	4	0	0	0	
B-5	3-Nov-00	0-1	0	0	0	
B-5	3-Nov-00	2	0	0	0	
B-5	3-Nov-00	3	0	0	0	
B-5	3-Nov-00	4	0	0	0	
B-6	15-Nov-00	0-1	0	0	0	
B-6	15-Nov-00	3	0	0	0	
B-6	15-Nov-00	4	60	80	0	
B-6	15-Nov-00	5	150	84	66	
MW-8	15-Nov-00	8	68	58	10	
MW-8	15-Nov-00	14	48	20	28	
MW-8	15-Nov-00	16	15	32	0	
MW-8	15-Nov-00	17	0	0	0	
MW-9	15-Nov-00	3	>1000	610	390	
MW-9	15-Nov-00	5	450	365	85	
MW-9	15-Nov-00	10	50	48	2	
MW-9	15-Nov-00	12	0	0	0	
MW-9	15-Nov-00	15	6.5	5	2	
MW-9	15-Nov-00	16	7	3	4	

TABLE 2
GROUND WATER ELEVATION SUMMARY
Clearwater Top

LOCATION	TOP OF CASING ELEVATION (FEET)	Total Well Depth	October 30, 2000		November 3, 2000		November 29, 2000	
			DEPTH TO WATER (FBTOC)	GROUNDWATER ELEVATION (FBTOC)	DEPTH TO WATER (FBTOC)	GROUNDWATER ELEVATION (FBTOC)	DEPTH TO WATER (FBTOC)	GROUNDWATER ELEVATION (FBTOC)
HSAMW-1	not located	-	-	-	-	-	-	-
HSAMW-2	not located	-	-	-	-	-	-	-
HSAMW-3	not located	-	-	-	-	-	-	-
HSAMW-4	50.00	10.14	8.02	41.98	8.04	41.96	7.95	42.05
HSAMW-5	47.28	11.71	3.52	43.76	3.80	43.48	3.92	43.36
HSAMW-6	not located	-	-	-	-	-	-	-
HSAMW-7	47.59	16.50	4.31	43.28	4.50	43.09	4.17	43.42
MW-7	NS	13.00	-	-	-	-	-	-
MW-8	47.48	16.00	-	-	-	-	5.56	41.92
MW-9	47.26	16.00	-	-	-	-	3.90	43.36
PZ-1	49.16	6.00	5.72	43.44	5.71	43.45	has been removed	
PZ-2	48.96	6.00	7.48	41.48	7.56	41.40	has been removed	
North Culvert	45.62	-	5.60	40.02	-	-	5.58	40.04

Monitor well MW-7 could not be surveyed as a truck was parked over the well
Monitor wells MW-8 and MW-9 were installed by QORE on November 15, 2000

FBTOC feet below top of casing

TABLE 3: SOIL AND SEDIMENT ANALYTICAL SUMMARY
Clearwater Top

	STATE CLEANUP TARGET LEVELS*			SAMPLE DESIGNATION						
				SOIL					SEDIMENT	
				10/30/2000	10/30/2000	10/30/2000	10/30/2000	11/15/2000	10/30/2000	10/30/2000
	RESIDENTIAL	INDUSTRIAL	LEACHABILITY	B-2 (1 foot)	B-3 (1 foot)	B-4 (1 foot)	B-5 (1 foot)	B-7 (3-4 feet)	S-1	S-2
Volatile Aromatics										
Benzene	1.1	1.6	0.007	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	<0.0061
Toluene	380	2600	0.5	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	<0.0061
Ethylbenzene	1100	8400	0.6	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	<0.0061
Total Xylenes	5900	40000	0.2	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	<0.0061
MTBE	3200	22000	0.2	<0.057	<0.062	<0.052	<0.052	<0.073	<0.053	<0.0061
Volatile Halocarbons										
Carbon Tetrachloride	0.4	0.6	0.04	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	NA
Chloroform	0.4	0.5	0.03	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	NA
1,1 - Dichloroethane	290	2000	0.4	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	NA
1,2 - Dichloroethane	0.5	0.7	0.01	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	NA
1,1 - Dichloroethylene	0.09	0.1	0.06	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	NA
cis - 1,2 - Dichloroethylene	19	130	0.4	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	NA
trans - 1,2 - Dichloroethylene	31	210	0.7	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	NA
Tetrachloroethylene	8.9	17	0.03	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	NA
1,1,1 - Trichloroethane	400	3300	1.9	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	NA
Trichloroethylene	6	8.5	0.03	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	NA
Vinyl Chloride	0.03	0.04	0.007	<0.0057	<0.0062	<0.0052	<0.0052	<0.0073	<0.0053	NA
Methylene Chloride	16	23	0.02	<0.029	<0.031	<0.026	<0.026	<0.036	<0.026	NA

Notes
mg/kg = milligrams per kilogram
Not Analyzed = NA
< = less than the laboratory Method Detection Level (MDL)
* = State Soil Cleanup Target levels listed in Table II of Chapter 62-777, Florida Administrative Code (F.A.C.) are used for comparison only
*** = Leachability values may be derived using the SPLP Test to calculate site specific SCTLs or may be determined using TCLP in
the event that oily wastes are present.

TABLE 4
METAL CONCENTRATIONS IN SOILS
Clearwater Top

Parameter	Soil Target Level Residential (mg/kg)	Soil Target Level Industrial (mg/kg)	SCTL for Leachability (mg/kg)	Soil (mg/kg)					Sediment (mg/kg)	
				B-2 (1 foot)	B-3 (1 foot)	B-4 (1 foot)	B-5 (1 foot)	B-7 (3-4 feet)	S-1	S-2
Arsenic	0.8	3.7	29	<0.80	<0.80	<0.80	<0.80	2.8	<0.80	NA
Barium	110	87000	1600	6.0	7.3	2.5	2.0	2.4	8.8	NA
Cadmium	75	1300	8	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NA
Chromium *	210	420	38	130	32	21	26	3	5.1	NA
Lead	400	920	-	6.2	5.5	2.5	10	2.1	9.1	NA
Selenium	390	10000	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Silver	390	9100	17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Mercury	3.4	26	2.1	0.028	0.027	<0.020	<0.020	<0.020	<0.020	NA

NOTES

Soil Cleanup Target Levels from Chapter 62-777, F.A.C.Table II used for reference only

* Based on hexavalent chromium

TABLE 5 : SURFACE WATER ANALYTICAL SUMMARY
Clearwater Top

Class III Surface Water Quality Criteria		10/30/2000
		Surface Water east ditch
Volatile Aromatics (ug/l)		
Benzene	<71.28	<1.0
Toluene	-	<1.0
Ethylbenzene	-	<1.0
Total Xylenes	-	<1.0
MTBE	-	<10

Notes

Surface Water Quality Standards for Recreation, Propagation, Maintenance of a Heathy, Well Balanced Population of Fish and Wildlife (Predominantly Fresh Waters)

TABLE 6: GROUNDWATER MONITORING WELL ANALYTICAL SUMMARY
Clearwater Top

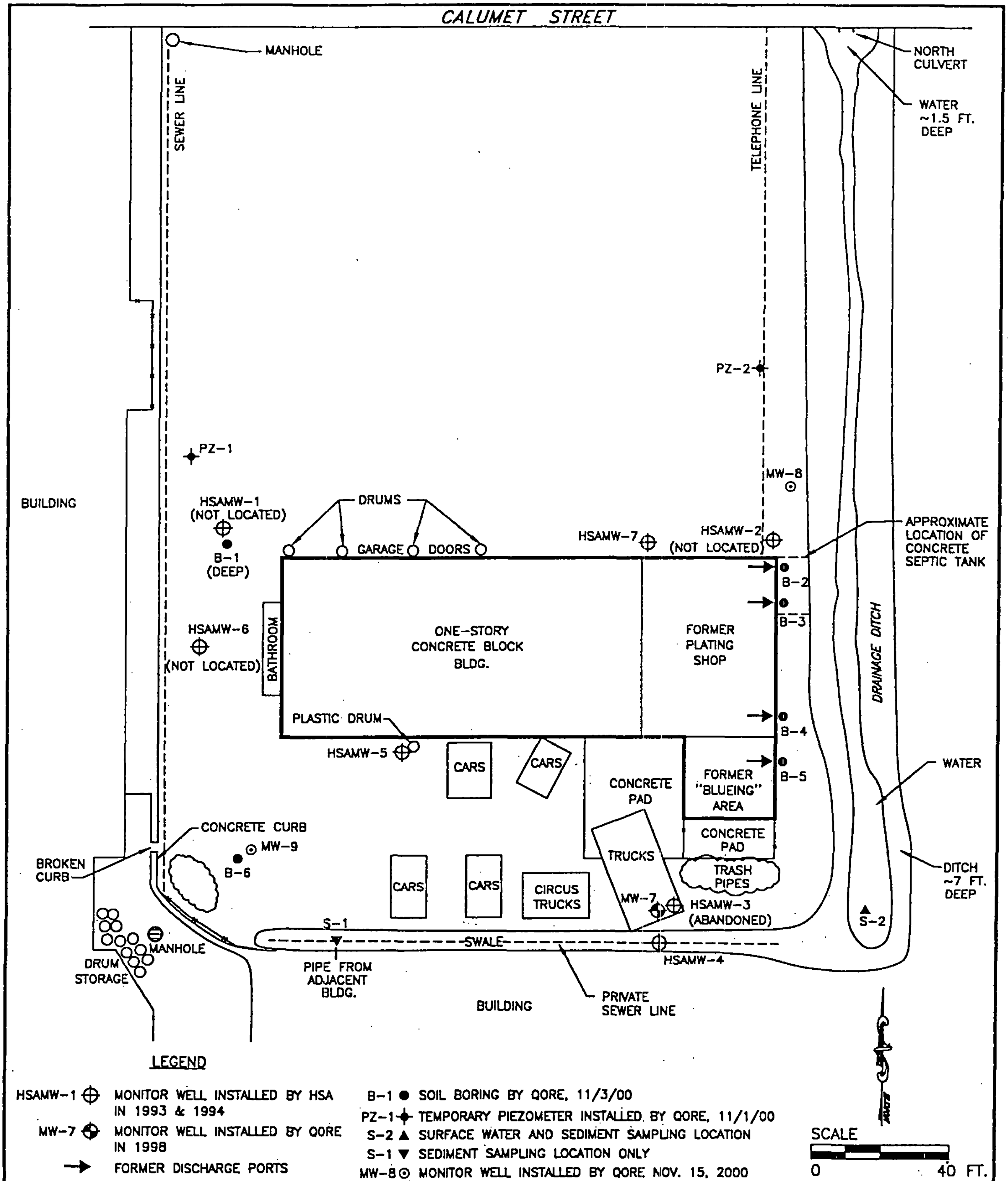
Primary and Secondary Drinking Water MCLs		Sample Designation					
		11/29/2000	11/29/2000	11/29/2000	11/29/2000	11/29/2000	11/29/2000
		HSAMW-4	HSAMW-5	HSAMW-7	MW-7	MW-8	MW-9
Volatile Aromatics (ug/l)							
Benzene	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	40	<1.0	<1.0	<1.0	2.8	<1.0	<1.0
Ethylbenzene	30	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Xylenes	20	<1.0	<1.0	<1.0	1.2	<1.0	<1.0
MTBE	50*	<10	<10	<10	<10	<10	<10
Volatile Halocarbons (ug/l)							
Bromodichloromethane	0.6 *	<1.0	<1.0	<1.0	<1.0	1.4	<1.0
Carbon Tetrachloride (CT)	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform (CF)	6*	<1.0	<1.0	<1.0	<1.0	10	3.9
Chlorobenzene		3.3	<1.0	<1.0	36	<1.0	<1.0
1,2 Dichlorobenzene	600	28	<1.0	<1.0	78	<1.0	<1.0
1,3 Dichlorobenzene	10	<1.0	<1.0	<1.0	5.5	<1.0	<1.0
1, 4 Dichlorobenzene	75	3.5	<1.0	<1.0	28	<1.0	<1.0
1,1 - Dichloroethane (1,1-DCA)	700* (systemic)	<1.0	<1.0	<1.0	2.4	<1.0	41
1,2 - Dichloroethane (1,2-DCA)	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1 - Dichloroethylene (1,1-DCE)	7	<1.0	<1.0	<1.0	2.2	<1.0	2.0
cis - 1,2 - Dichloroethylene (cis-DCE)	70	1000	<1.0	<1.0	4200	<1.0	<1.0
trans - 1,2 - Dichloroethylene (trans-DCE)	100	59	<1.0	<1.0	48	<1.0	<1.0
1,2 Dichloropropane	400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethylene (PCE)	3	3.2	< 1.0	< 1.0	300	< 1.0	<1.0
1,1,1 - Trichloroethane (TCA)	200	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0
1,1,2 Trichloroethane	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	<1.0
Trichloroethylene (TCE)	3	<1.0	<1.0	<1.0	170	<1.0	<1.0
Vinyl Chloride (VC)	1	<1.0	<1.0	<1.0	4.8	<1.0	<1.0
Methylene Chloride (MC)	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5

Notes
Below Detection Limits = BDL
Not Sampled = NS
State Primary and Secondary Drinking Water Standards Maximum Contaminant Levels (MCLs) from Chapter 62-550, Florida Administrative Code (F.A.C.)
* State carcinogens, organoleptics, and systemic toxicants standards are used for reference only

3.2	Exceedance of State Primary or Secondary Drinking Water Standard
10	Exceedance of State carcinogen, organoleptic, and systemic toxicant standard shown for reference only

TABLE 7: WELL INVENTORY
Clearwater Top

SWFMD Permit Number	Section Township and Range	Use	Diameter	Depth of Casing	Well Depth	Approximate Location
393110	1/29/15	Public Supply	12	83	185	approximately 1500 feet northeast
409092	1/29/15	Public Supply	4	60	180	1941 Sunset Point Rd
397842	1/29/15	Irrigation	4	60	180	2000 Calumet
429283	1/29/15	Irrigation	4	66	160	1740 Hercules
465869	1/29/15	Irrigation	4	40	180	2005 Calumet
487186	1/29/15	Irrigation	4	90	180	2140 Calumet
524226	1/29/15	Irrigation	4	68	115	1840 Greenlea
527716	1/29/15	Irrigation	1.25	18	28	1310 North Hercules
582847	1/29/15	Irrigation	4	84	122	1934 N Hercules
591770	1/29/15	Irrigation	4	110	130	1335 Keene Rd
596063	1/29/15	Irrigation	4	160	260	2050 Sunnydale Blvd
605007	1/29/15	Irrigation	4	68	110	1841 N Keene Rd
613410	1/29/15	Irrigation	4	84	182	1700 Sunshine Dr
623657	1/29/15	Irrigation	4	80	140	1780 Kenesaw Ln
627240	1/29/15	Irrigation	4	75	140	1860 Hercules Ave N
631988	1/29/15	Irrigation	4	85	160	2090 Sunnydale Blvd
523829	2/29/15	Irrigation	4	100	180	1907 Calumet
579465	2/29/15	Irrigation	1	13	18	1830 Murray Ave
403931	12/29/15	Irrigation	4	70	130	2170 Sunnydale Blvd
462231	12/29/15	Irrigation	4	90	160	1212 N Hercules
546847	12/29/15	Irrigation	5	120	240	2140 Calumet
552744	12/29/15	Irrigation	4	93	180	1351 Arcturas Ave



CLEARWATER TOP, INC.	DATE 12/15/00	JOB NO. C8212	PLATE NO. 2

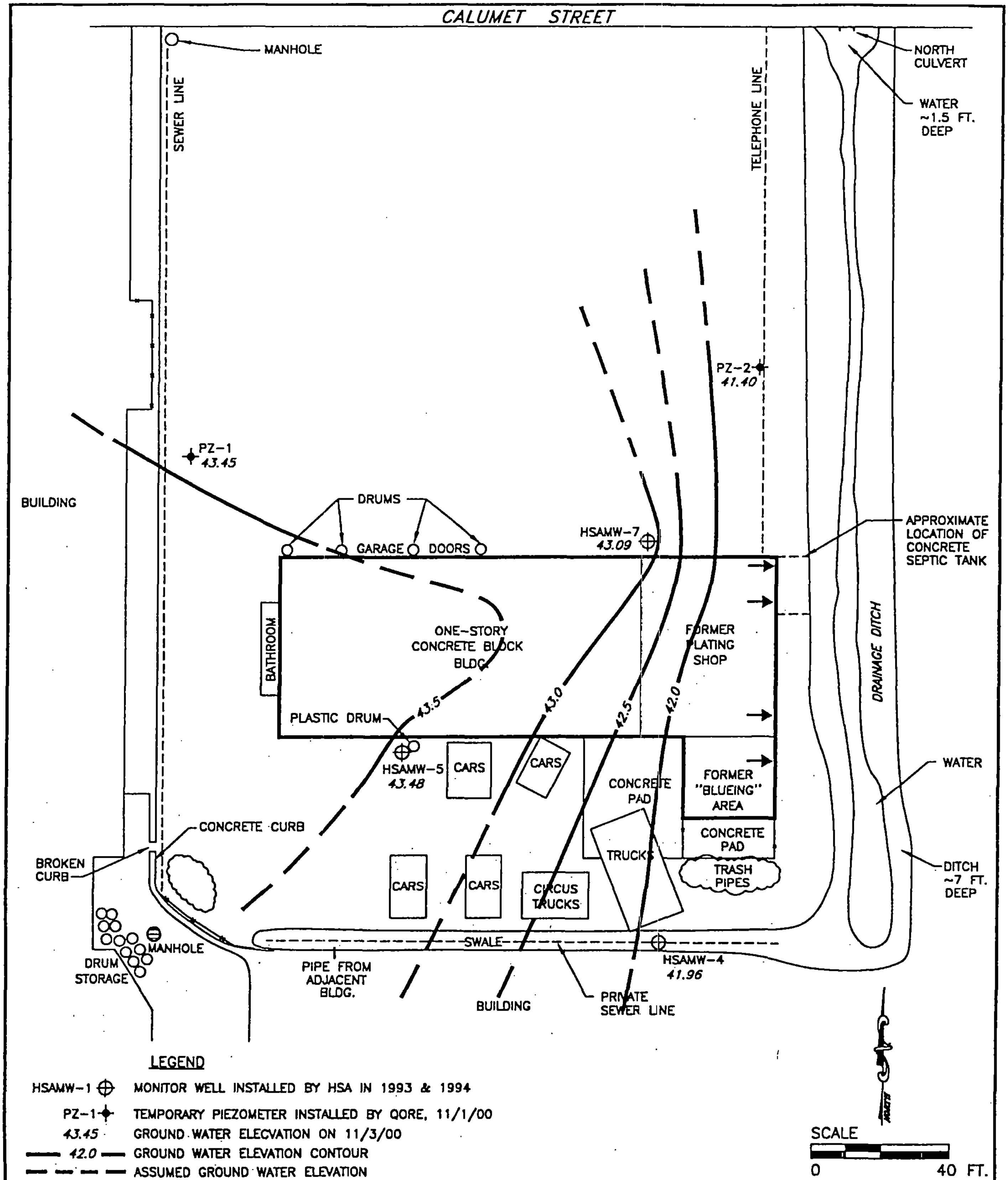
QORE™ PROPERTY SCIENCES

1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646

SITE LAYOUT MAP

CLEARWATER, FLORIDA

8212\SITE-LAY



CLEARWATER TOP, INC.	DATE 12/15/00	JOB NO. P8212	PLATE NO. 3

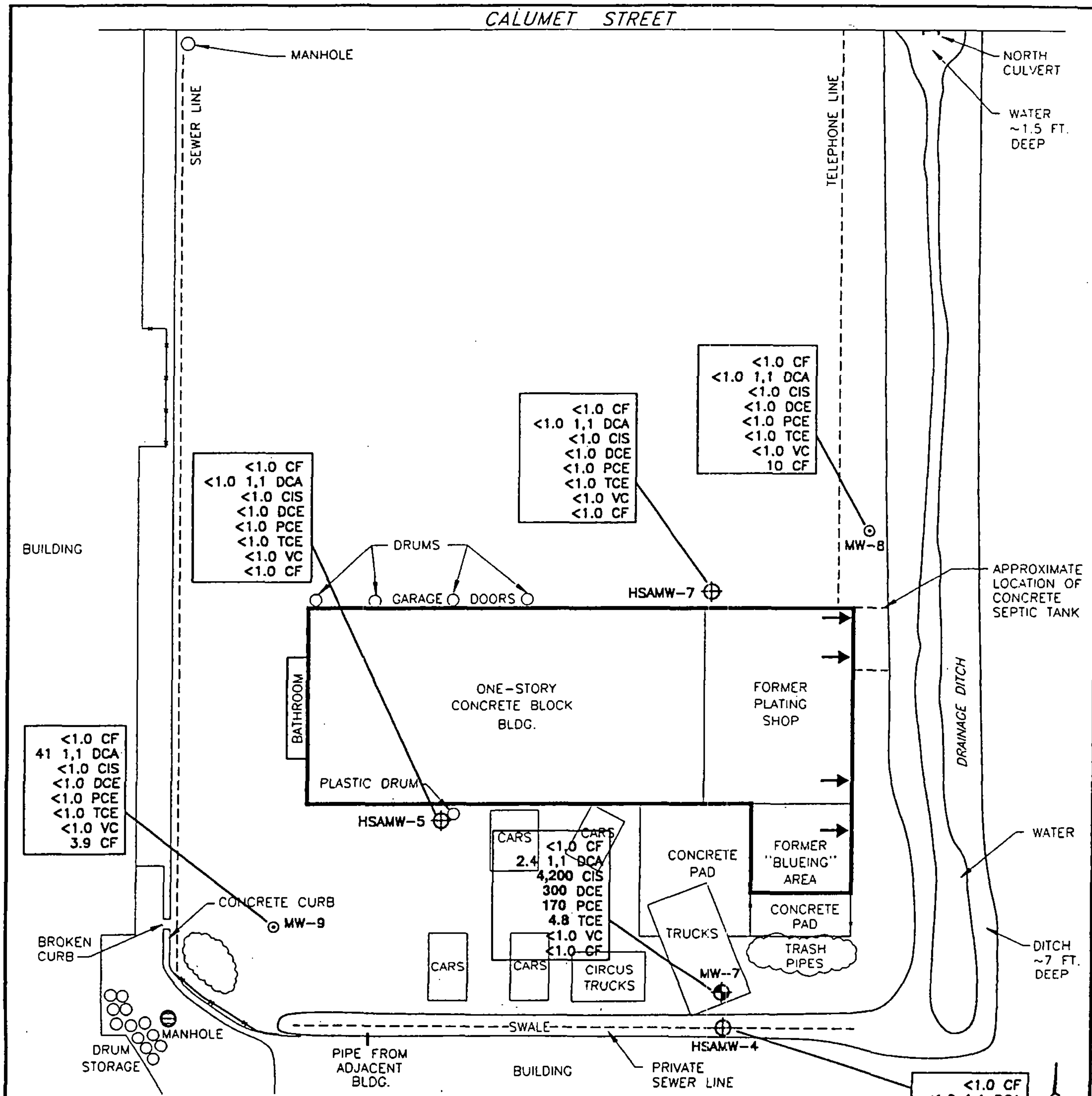
QORE™ PROPERTY SCIENCES

1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646.

GROUND WATER ELEVATION CONTOUR MAP NOVEMBER 3, 2000

CLEARWATER, FLORIDA

8212\GWE12300



LEGEND

HSAMW-1 ⊕ MONITOR WELL INSTALLED BY HSA IN 1993 & 1994

MW-7 MONITOR WELL INSTALLED BY QORE IN 1998

MW-8 ⊙ MONITOR WELL INSTALLED BY QORE NOV. 15, 2000

CF	CARBON TETRACHLORIDE (ug/L)
1,1 DCA	1,1 DICHLOROETHANE (ug/L)
CIS DCE	CIS-1,2-DICHLOROETHYLENE (ug/L)
PCE	TETRACHLOROETHYLENE (ug/L)
TCE	TRICHLOROETHYLENE (ug/L)
VC	VINYL CHLORIDE (ug/L)
CF	CHLOROFORM (ug/L)
300	CONCENTRATION ABOVE PRIMARY AND SECONDARY DRINKING WATER MCLs

CONCENTRATIONS MEASURED NOVEMBER 29, 2000

CLEARWATER TOP, INC.	DATE 12/18/00	JOB NO. P8212	PLATE NO. 4

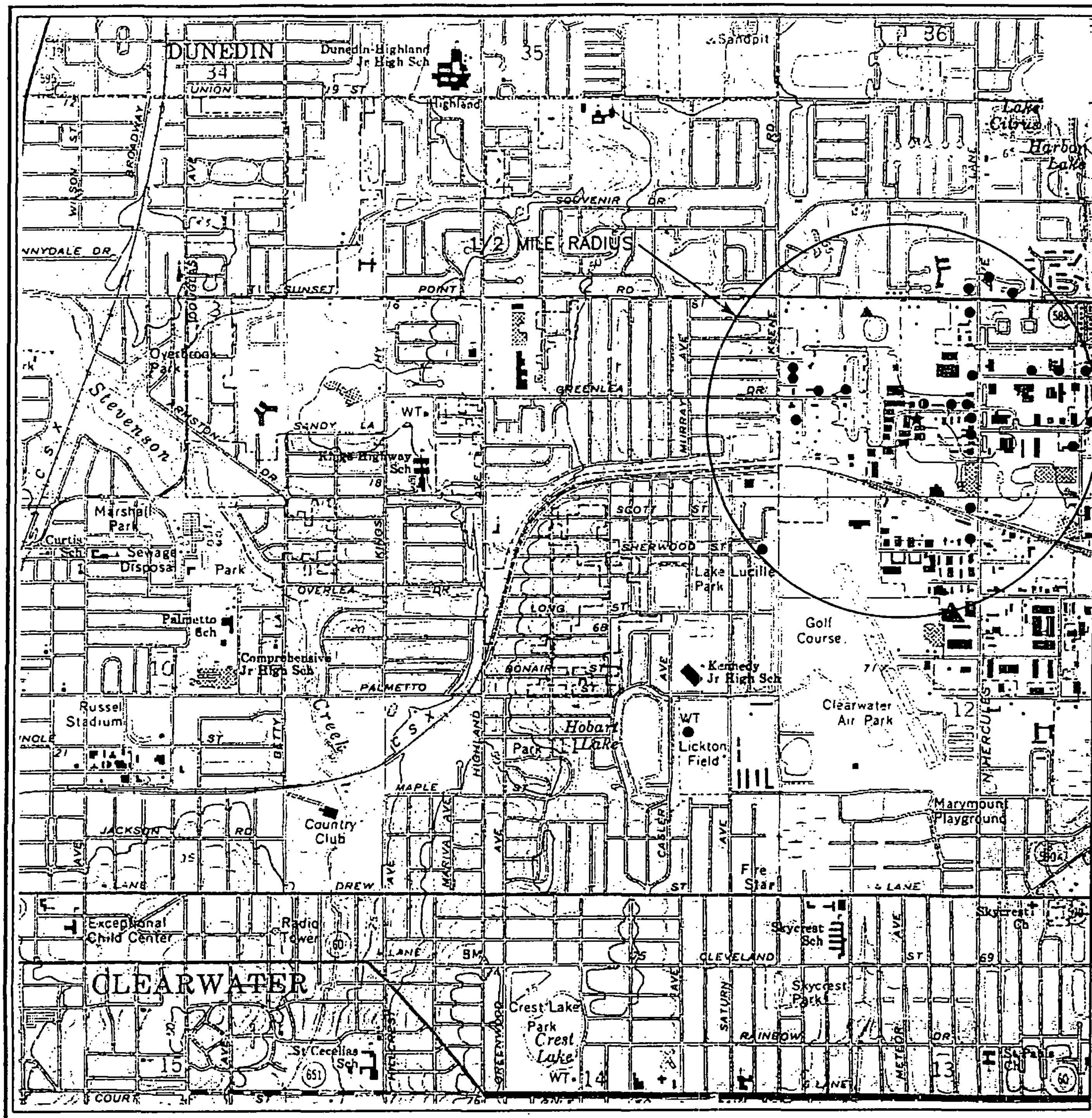
QORE™ PROPERTY SCIENCES

1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646

GROUND WATER CONTAMINATION CONCENTRATION MAP VOLATILE HYDROCARBONS

CLEARWATER, FLORIDA

8212\GW-CONT



SECTION 1, T29S, R15E

USGS 7.5 MINUTE
CITRUS PARK QUADRANGLE
PHOTOREVISED 1981

NORTH

SCALE

0 2000 FT.

CLEARWATER TOP, INC.	DATE 12/15/00	JOB NO. P8212	PLATE NO. 5

QORE™ PROPERTY SCIENCES

1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646

WELL SURVEY

CLEARWATER, FLORIDA

8212WELLSURV

APPENDIX A
CAP APPROVAL LETTER

8217

Department of Environmental Protection

Jeb Bush
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

David B. Struhs
Secretary

RECEIVED
SEP 18 2000
TAMPA

September 14, 2000

Ms. Ruth Fedorsyn,
Clearwater Top, Inc.,
P.O. Box 5212,
Clearwater, Florida 34618-5212

Re: Contamination Assessment Plan (CAP) Response to Comments dated and received July 13, 2000, Accurate Plating/Clearwater Top, Inc. 1937 Calumet Street, Clearwater, Pinellas County, Florida

Dear Ms. Fedorsyn:

The Department is in receipt and approves of the above referenced report and the CAP submitted in June 25, 1999. Please submit the Contamination Assessment Report (CAR) within 90 days of letter receipt (December 18, 2000). It is noted the information requested in items 11 (previous owners/tenants) and 12 (the location of storm sewers, inlets, and sanitary sewers on the property) will be provided upon submission of the CAR.

If you have questions or concerns regarding the above, please contact me at (813)-744-6100, ext. 474.

Sincerely yours,

Laura J. Herron

Laura J. Herron, CHMM, REM
Environmental Specialist II
Bureau of Waste Cleanup

cc: Mr. John Hull, P.G., QORE Property Sciences, 1211 Tech Boulevard, Suite 200, Tampa, Florida 33619

APPENDIX B
SOIL BORING AND MONITOR WELL CONSTRUCTION LOGS

BORING LOG

QORE Property Sciences

SHEET 1 OF 1

BORING NO B-1 | JOB NO P8212 | LOCATION CLEARWATER

CLIENT CLEARWATER TOP | DRILLER HUSS

LOGGED BY C. McKENZIE

START 0935 | FINISH 1030

GROUND ELEVATION

WATER DEPTH

DATE

TIME

CASING DEPTH

DRILLING METHOD 2-1/4 HSA

SAMPLING METHOD SPILT SPOON

SURFACE CONDITIONS GRASS

DEPTH (FEET)	SAMPLE TYPE	BLOWS/ PENETRATION	LENGTH	USGS CLASSIFICATION	SAMPLE NO.	SAMPLE DEPTH	20 40 60 80 N (OR) % RECOVERED	GRAPHIC LOG	DESCRIPTION	NOTES
0									Fill, sand and gravel, SAND dark brown to black, fine grained	
1.5								SP	SAND, dark brown, fine grained, loose, moist, trace silt	
3.5								SP	SAND, brown, fine grained, loose, moist, trace silt	
4		3 / 2 / 3 / 4		18" / 18"				CL	CLAY, dark brown, medium soft, brown vegetation, trace some sand	
6		5 / 7 / 7 / 7		18" / 18"				SP	SAND, dark gray brown, fine grained, clayey, loose, moist	
7								SP	SAND, dark brown, fine grained, some clay, loose, moist	
8		9 / 9 / 9 / 9		18" / 18"				SP	SAND, dark brown, fine grained, little clay, loose, moist, trace black gravel fragments	
9.5								SP	SAND, brown, fine grained, loose, wet, little clay black layer @ 11ft.	
10		7 / 2 / 5 / 9		18" / 18"						
11								SP	SAND, light gray, fine grained, clayey, loose, wet	
12		8 / 9 / 13 / 13		18" / 16"				SP	SAND, dark brown, fine grained, some clay, loose, wet	
14		6 / 8 / 9 / 10		18" / 16"						
14.5								SP	SAND, dark brown, fine to medium grained, loose, wet	
16		6 / 6 / 8 / 8		18" / 16"				CL	CLAY, gray blue, very stiff, low plasticity, moist	
18									End of Boring	

BORING LOG

SHEET 1 OF 1 — QORE Property Sciences

BORING NO B-2 — JOB NO P8212 — LOCATION CLEARWATER

CLIENT CLEARWATER TOP — DRILLER

LOGGED BY C. McKENZIE

START 1200 — FINISH 1220

GROUND ELEVATION

WATER DEPTH

DATE

TIME

CASING DEPTH

DRILLING METHOD HAND AUGER

SAMPLING METHOD

SURFACE CONDITIONS

SAMPLE TYPE	BLOWS/ PENETRATION	LENGTH	USGS CLASSIFICATION	SAMPLE NO.	SAMPLE DEPTH	20 40 60 80 N (OR) % RECOVERED	DEPTH (FEET)	GRAPHIC LOG	DESCRIPTION	NOTES
							0		Concrete	
							1		Washout	
							2	SP	SAND, light brown, fine grained, rubble, loose, dry	
							4	SP	SAND, brown, fine grained, loose, moist	
							4		Refusal @ 4 ft. — on concrete	

DEPTH (FEET) 0–20

b2log

BORING LOG

SHEET 1 OF 1 — QORE Property Sciences

BORING NO B-3 — JOB NO P8212 — LOCATION CLEARWATER

CLIENT CLEARWATER TOP — DRILLER

LOGGED BY C. McKENZIE

START 1230 — FINISH 1245

GROUND ELEVATION

WATER DEPTH

DATE

TIME

CASING DEPTH

DRILLING METHOD HAND AUGER

SAMPLING METHOD

SURFACE CONDITIONS

SAMPLE TYPE	BLOWS/ PENETRATION	LENGTH	USGS CLASSIFICATION	SAMPLE NO.	SAMPLE DEPTH	20 40 N (OR) % 60 RECOVERED 80	DEPTH (FEET)	GRAPHIC LOG	DESCRIPTION	NOTES
							0–1		Concrete	
							1–2		Sand fill, rubble	
							2–3	SP	SAND, black, fine grained, loose, moist	
							3–3.5	SP	SAND, gray and brown, fine grained, loose, moist	
							3.5–4	SP	SAND, reddish brown, fine grained, loose, moist	
							4		Refusal @ 4 ft. – on concrete	

DEPTH (FEET) 0–20

b3log

BORING LOG

SHEET 1 OF 1 — QORE Property Sciences

BORING NO B-4	JOB NO P8212	LOCATION CLEARWATER	
CLIENT CLEARWATER TOP	DRILLER	START 1300	FINISH 1315
LOGGED BY C. McKENZIE		GROUND ELEVATION	
DRILLING METHOD HAND AUGER		WATER DEPTH	
SAMPLING METHOD		DATE	
		TIME	
SURFACE CONDITIONS		CASING DEPTH	

SAMPLE TYPE	BLOWS/ PENETRATION	LENGTH	USGS CLASSIFICATION	SAMPLE NO.	SAMPLE DEPTH	20 40 60 80 N (OR) % RECOVERED	DEPTH (FEET)	GRAPHIC LOG	DESCRIPTION	NOTES
							0	SP	SAND, brown, fine-grained, loose, dry, gravel at surface	
							1.5	SP	SAND, black, fine grained, loose, moist	
							2.5	SP	SAND, light gray, fine grained, loose, moist	
							3.5	SP	SAND, reddish brown, fine grained, loose, moist	
							4		Wet @ 4 ft. End of Boring	

DEPTH (FEET) 0–20

b4log

BORING LOG

SHEET 1 OF 1

QORE Property Sciences

BORING NO B-5 JOB NO P8212 LOCATION CLEARWATER

CLIENT CLEARWATER TOP DRILLER

LOGGED BY C. McKENZIE

START 1345 FINISH 1357

GROUND ELEVATION

WATER DEPTH

DATE

TIME

CASING DEPTH

DRILLING METHOD HAND AUGER

SAMPLING METHOD

SURFACE CONDITIONS

DEPTH (FEET)	SAMPLE TYPE	BLOWS/ PENETRATION	LENGTH	USGS CLASSIFICATION	SAMPLE NO.	SAMPLE DEPTH	N (OR) % RECOVERED 20 40 60 80	DEPTH (FEET)	GRAPHIC LOG	DESCRIPTION	NOTES
0								0	SP	SAND, light brownish yellow, fine-grained, loose, dry	
1.5									SP	SAND, gray, fine grained, loose, moist	
3								3	SP	SAND, reddish brown, fine grained, loose, moist	
4								4	SP	SAND, brown, fine grained, loose, wet @ 3.7 ft.	
4.5										End of Boring	

b5log

BORING LOG

SHEET 1 OF 1

QORE Property Sciences

BORING NO B-6 | JOB NO P8212 | LOCATION CLEARWATER

CLIENT CLEARWATER TOP | DRILLER

LOGGED BY C. McKENZIE

START 1245 | FINISH 1255

GROUND ELEVATION

WATER DEPTH

DATE

TIME

CASING DEPTH

DRILLING METHOD HAND AUGER

SAMPLING METHOD

SURFACE CONDITIONS

SAMPLE TYPE	BLOWS/ PENETRATION	LENGTH	USGS CLASSIFICATION	SAMPLE NO.	SAMPLE DEPTH	20 40 60 80 N (OR) % RECOVERED	DEPTH (FEET)	GRAPHIC LOG	DESCRIPTION	NOTES
							0		Green surface staining	
							1	SP	SAND, pale yellowish brown, fine grained, trace gravel	
							2	SP	SAND, pale yellowish brown, fine grained, some silt, moist	
							3	SP	SAND, moderate brown, fine grained, some silt, moist	
							4	SP	SAND, dark yellowish orange, fine grained, loose, wet @ 5ft.	
							5		End of Boring	

DEPTH (FEET) 0–20

b6log

BORING LOG

SHEET 1 OF 1 — QORE Property Sciences

BORING NO PZ-1 — JOB NO P8212 — LOCATION CLEARWATER

CLIENT CLEARWATER TOP — DRILLER QORE

LOGGED BY L. DOCKTER

START ____ FINISH ____

GROUND ELEVATION ____

WATER DEPTH ____ DATE ____ TIME ____

CASING DEPTH ____

DRILLING METHOD HAND AUGER

SAMPLING METHOD GRAB

SURFACE CONDITIONS GRASS

SAMPLE TYPE	BLOWS/ PENETRATION	LENGTH	USGS CLASSIFICATION	SAMPLE NO.	SAMPLE DEPTH	20 40 60 80 N (OR) % RECOVERED	DEPTH (FEET)	GRAPHIC LOG	DESCRIPTION	NOTES
							0	SP	SAND, dark yellowish brown, fine grained	
							0.5	SP	SAND, yellowish gray, fine grained, limerock gravel	
							1.5	SP	SAND, dark gray, fine grained	
							2	SP	SAND, moderate brown, fine grained	
							3.5	SP	SAND, light yellowish brown, fine grained	
							5		End of Boring	

DEPTH (FEET) 0–20

PZ1LOG

BORING LOG

SHEET 1 OF 1

QORE Property Sciences

BORING NO PZ-2 JOB NO P8212 LOCATION CLEARWATER

CLIENT CLEARWATER TOP DRILLER QORE

LOGGED BY L. DOCKTER

START ____ FINISH ____

GROUND ELEVATION ____

WATER DEPTH ____

DATE ____

TIME ____

CASING DEPTH ____

DRILLING METHOD HAND AUGER

SAMPLING METHOD GRAB

SURFACE CONDITIONS GRASS

DEPTH (FEET)	SAMPLE TYPE	BLOWS/ PENETRATION	LENGTH	USGS CLASSIFICATION	SAMPLE NO.	SAMPLE DEPTH	20 40 60 80 N (OR) % RECOVERED	DEPTH (FEET)	GRAPHIC LOG	DESCRIPTION	NOTES
0									SP	SAND, dark gray, fine grained, rich organic	
6								6	SP	SAND, grayish brown, fine grained	
7								7		End of Boring	

Depth scale: 0–20 feet.

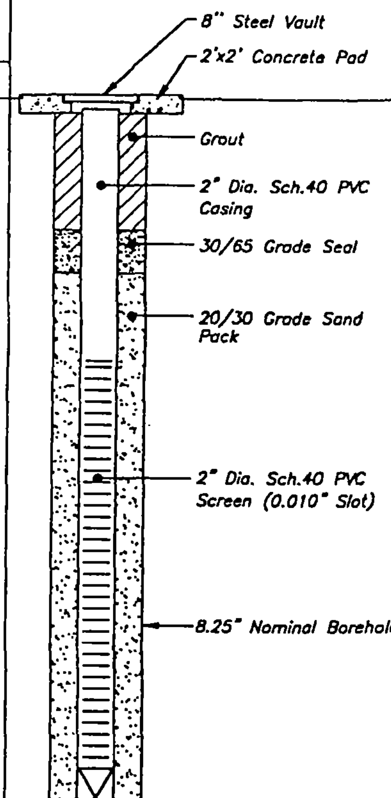
Monitoring Well No. MW-8

PROJECT: Clearwater Top	**DRILL METHOD:** HSA	**TOC ELEV:** N/A
LOGGED BY: C. McKenzie	**SAMPLE TYPE:** Split Spoon	**GROUND ELEV:** N/A
DRILLER: Huss	**HOLE DIA.:** 8.25"	**STICK-UP:** N/A
DATE INSTALLED: 11/15/00	**STATIC WL:**	**SURVEYOR:**

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.
SAND, dark yellowish brown, fine-grained	SP		0–2		
SAND, grayish brown to black, fine-grained, silty, loose, moist, concrete rubble Large rock No recovery Rocks – gravel large fragments ~1.5"	SP		2–8		
SAND, pale yellowish brown, fine-grained, clayey, medium dense, wet	SP		8–14		
SAND, dark yellowish brown, fine-grained, clayey, loose, wet	SP		14–15.5		
CLAY, dark yellowish brown, silty, some sand, loose, wet	CL		15.5–16		
CLAY, pale olive, stiff	CL		16–18		
Boring terminated at 18' BGS					

Depth scale: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

WELL CONSTRUCTION DETAIL



QORE™ PROPERTY SCIENCES
1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646

Notes:

Project No. 27-8212

Monitoring Well No. MW-9

PROJECT: Clearwater Top
LOGGED BY: C. McKenzie
DRILLER: Huss
DATE INSTALLED: 11/15/00

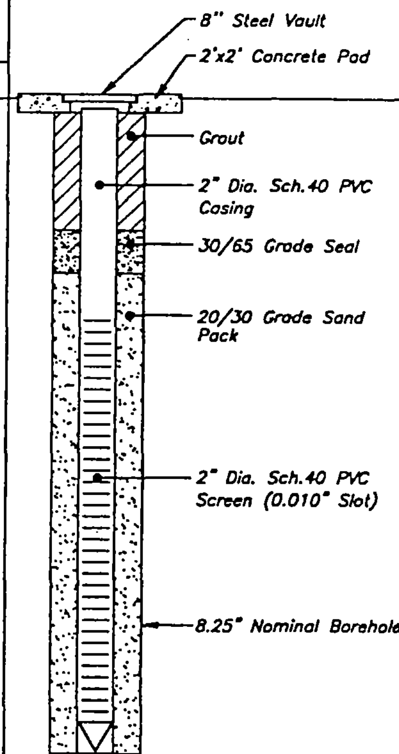
DRILL METHOD: HSA
SAMPLE TYPE: Split Spoon
HOLE DIA.: 8.25"
STATIC WL:

TOC ELEV: N/A
GROUND ELEV: N/A
STICK-UP: N/A
SURVEYOR:

DESCRIPTION	USCS CLASS	GRAPHIC LOG	DEPTH	SAMPLE	BLOWS/FT.
SAND, dark yellowish brown, fine-grained, loose, moist	SP		0–1.5		
SAND, cemented, black, fine-grained, rock like fragments	SP		1.5–3		
SAND, dark dusky yellowish brown, cemented fragments	SP		3–4.5		
SAND, grayish orange, fine-grained, loose, wet	SP		4.5–9.5		
SAND, dark yellowish orange, fine-grained, loose, wet	SP		9.5–10.5		
SAND, very pale orange, fine-grained, some silt, loose, wet	SP		10.5–15		
SAND, pale yellowish brown, fine-grained, some silt, loose, wet @15.5 ft.	SP		15–16		
CLAY, pale olive, stiff, moist, trace sand at top 2" of clay	CL		16–17		
Boring terminated at 17' BGS					

DEPTH scale: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

WELL CONSTRUCTION DETAIL



QORE™ PROPERTY SCIENCES

1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646

Notes:

Project No. 27-8212

APPENDIX C
MONITOR WELL LOCATION LETTER TO FDEP

QORE

PROPERTY SCIENCES

November 9, 2000

Florida Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

RE: **Monitor Well Locations**
Contamination Assessment (CA)
Clearwater Top, Inc.
1937 Calumet Street
Clearwater, Pinellas County, Florida
QORE Project No. 27-8212

Attention: Ms. Laura J. Herron, CHNM, REM
Environmental Specialist II

Dear Ms. Herron:

On behalf of Clearwater Top, Inc., QORE, Inc. (QORE) is pleased to provide the proposed monitor well locations to the Florida Department of Environmental Protection (FDEP) for the Contamination Assessment at the Clearwater Top property. QORE has completed Tasks 1, 2, and 3, as outlined in the Contamination Assessment Plan (CAP) submitted to the FDEP on June 24, 1999 and the Response to Comments for the CAP submitted to the FDEP on July 13, 2000.

Based on water elevations measured on October 30, 2000 and November 3, 2000, within the three existing wells at the site and the two piezometers installed by QORE on October 30, 2000, ground water flow at the site is generally to the east (Plate 1). The deep soil boring was installed on November 3, 2000, near the northwestern corner of the building, which is upgradient of the area of known impact at MW-7 (Plate 1). The soil lithology at the location of the deep soil boring consists of a brown to gray sand unit with varying amounts of silt and clay, which was present from the ground surface to a depth of 16 feet. A clay unit with some sand was present at a depth of 5 to 6 feet and a clayey sand was present at a depth of 11 to 12 feet. A gray blue very stiff clay unit, which appears to be the upper undifferentiated Hawthorn, was encountered at a depth of 16 feet below ground surface.

A total of three proposed monitor well locations are shown on Plate 1. The locations have been selected based on the ground water flow direction and previously reported laboratory data. Based on the results of the ground water analysis, additional ground water monitor wells may be added at a later date to delineate the zone of impact. The proposed well construction is shown on Plate 2. The monitor wells will be installed to the base of the surficial aquifer, which is estimated at approximately 16 feet, based on the deep soil boring.

The undifferentiated Hawthorne unit, the Arcadia formation and the Tampa member of the Arcadia formation make up the Hawthorn group in the Clearwater area (Florida Geological Survey Publication "The lithostratigraphy of the Hawthorn Group of Florida", 1988). The thickness of the undifferentiated Hawthorn within the area of the site is unknown, however to the

1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646 fax (813) 623-3795

east, closer to Tampa it ranges in thickness from 10 feet to 50 feet. The Arcadia formation, including the Tampa member is up to 100 feet thick in the area, and consists of primarily limestone and dolostone with varying amounts of quartz sand, clay and phosphatic grains.

The deep vertical extent well is not proposed at this time, due to the presence of the Hawthorn unit at a depth of only 16 feet below ground surface.

QORE is planning to install the three shallow monitor wells at the locations shown on Plate 1 on November 15, 2000 and would appreciate any comments related to the well installation locations prior to this date.

If you have questions or comments regarding the information provided above, please contact me at (813) 623-6646.

Yours very truly,

QORE, Inc.

Jonathan E. Hull
11-9-00

Jonathan E. Hull, P.G.
Principal Consultant

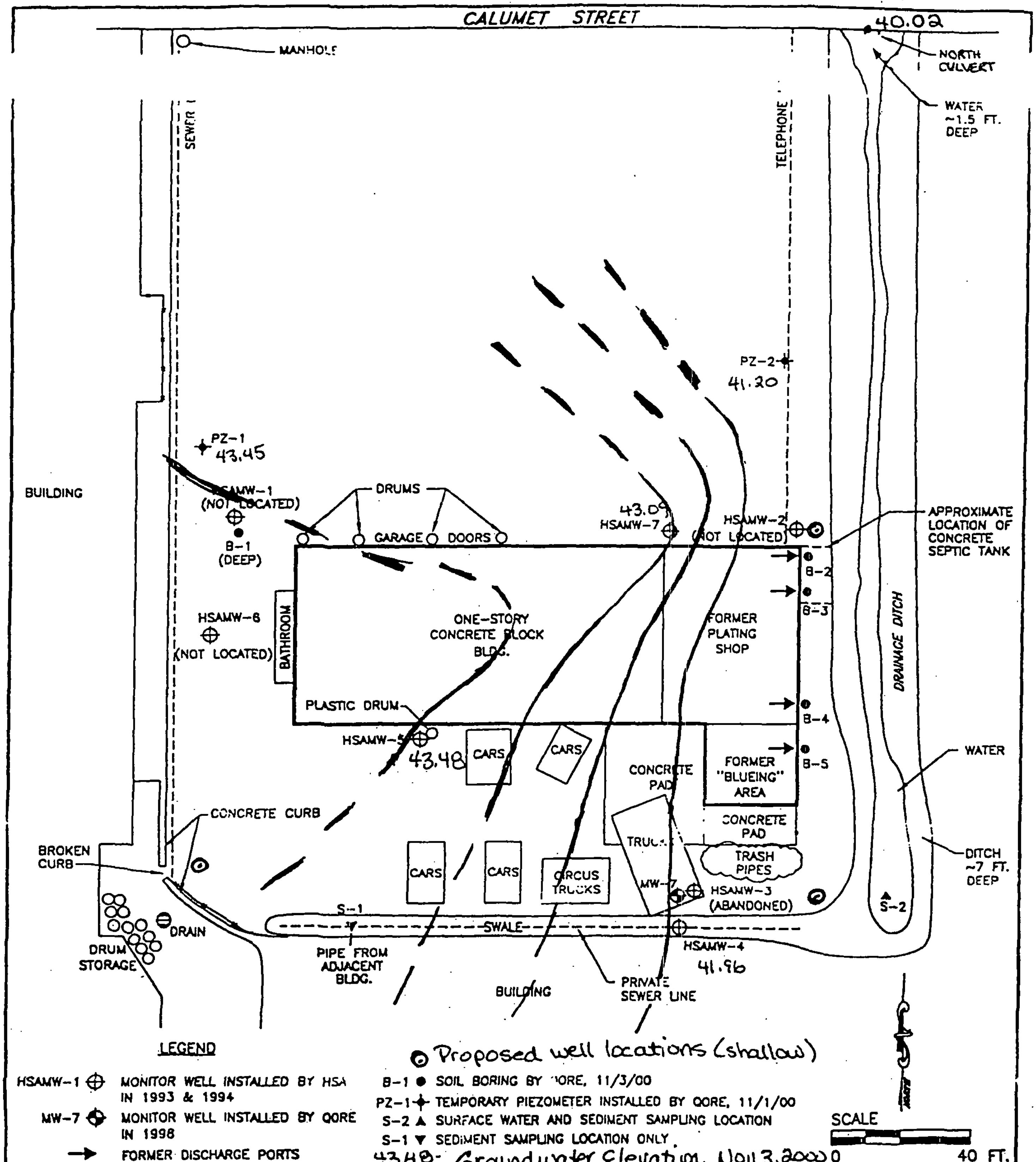
Christine McKenzie

Christine McKenzie
Project Hydrogeologist

Attachments

cc: Ms. Ruth Fedorsyn, Clearwater Top, Inc.

G:ENV\projects\P8212\FDEP draft monitor well locations 11.8.00



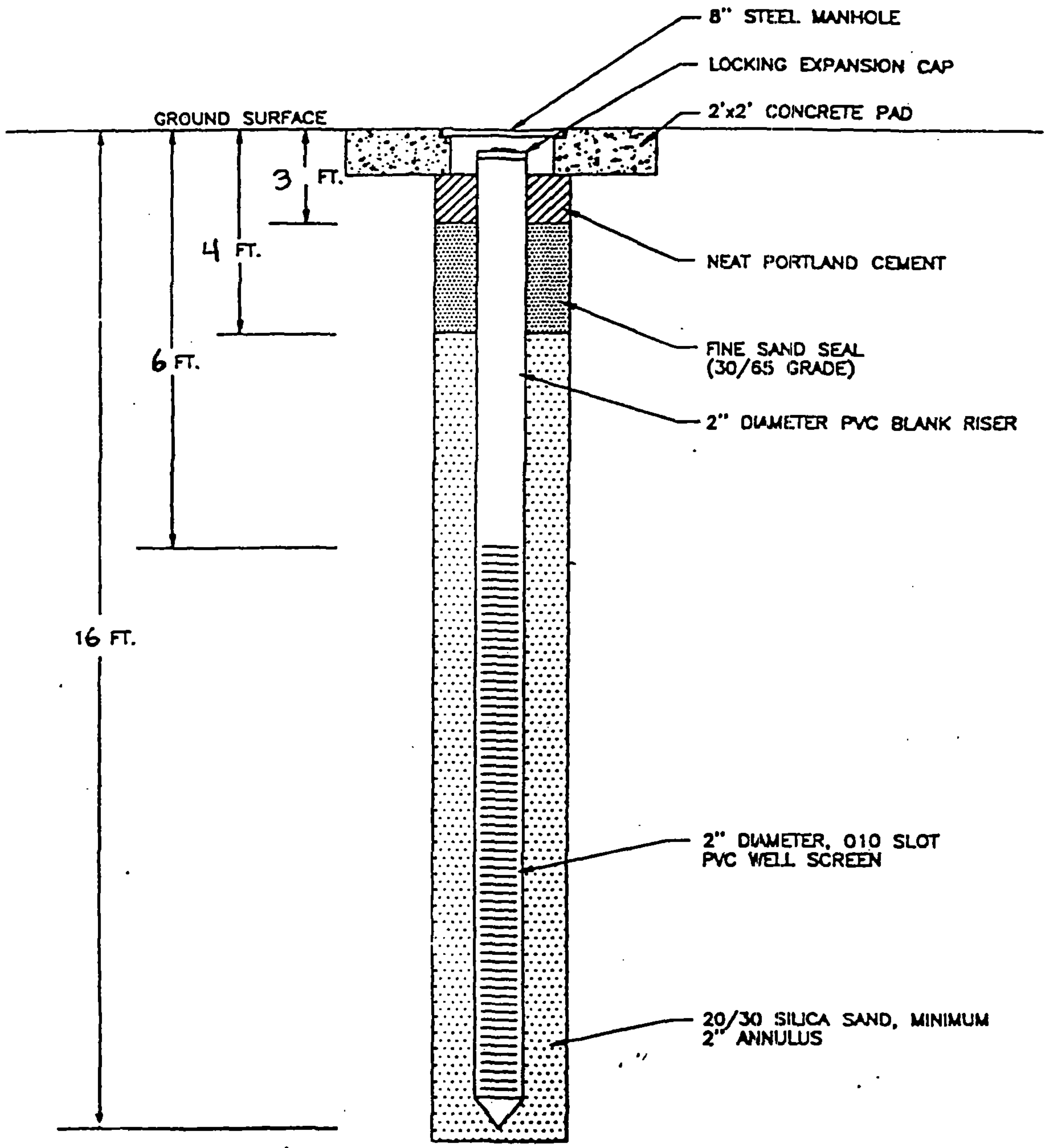
CLEARWATER TOP, INC.	DATE 11/7/00	JOB NO. C8212	PLATE NO. 1

QORE™ PROPERTY SCIENCES

1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646

SITE LAYOUT MAP and Proposed well locations

CLEARWATER, FLORIDA



NOTE: NOT TO SCALE

CLEARWATER TOP, INC.	DATE 7/13/00	JOB NO. P8212	PLATE NO. 2
QORE™ PROPERTY SCIENCES 1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646	PROPOSED SHALLOW MONITOR WELL CONSTRUCTION DETAILS CLEARWATER, FLORIDA		

APPENDIX D
MONITOR WELL PURGE FORMS

QORE™ PROPERTY SCIENCES

QORE JOB NUMBER
27P8212A

Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-8	SAMPLE ID: MW-8 112900	DATE: 11/29/00
SITE NAME: Clearwater TOP		SITE LOCATION: Clearwater FL	

PURGE DATA

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 15.75	DEPTH TO WATER (ft): 5.56	WELL CAPACITY (gal/ft): .16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =

1.6 = (15.75 - 5.56) x .16 =

10 = wc
4.8 = 3 vol
8 = 5 vol

PURGE METHOD: Isco Pump	PURGING INITIATED AT: 0846	PURGING ENDED AT: 0852
	PURGE RATE (gpm): .83	TOTAL VOLUME PURGED (gal): 5

Time	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°c)	COND. (umhos)	COLOR	Turbidity	APPEARANCE	OTHER
0847	1.5	5.87	17.0	633us	none	—	clear	
0850	3	6.15	18.1	632us	Brown	—	cldy	
0852	5	6.20	18.4	626us	~	—	—	
Sample								
1110	~~6~~	6.14	17.1	671us	Tan	—	cldy	

SAMPLING DATA

SAMPLED BY / AFFILIATION: Qore	SAMPLER(S) SIGNATURE(S): B. M [signature]	
SAMPLING METHOD(S): Bailer	SAMPLING INITIATED AT: 1110	SAMPLING ENDED AT: 1113
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N	DUPLICATE: Y N

NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	INTENDED ANALYSIS AND/OR METHOD
3	CG	40 ml	HCL	—	—	8021

REMARKS:

MATERIAL CODES: AG=AMBER GLASS; CG=CLEAR GLASS; HDP= HIGH DENSITY POLYETHYLENE; O=OTHER
WELL CAPACITY: 1.25"=0.06gal/ft; 2"=0.16 gal/ft; 4"=0.65 gal/ft; 6"=1.47 gal/ft; 8"=2.61 gal/ft; 12"=5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

EB-1 1105

QORE™ PROPERTY SCIENCES

QORE JOB NUMBER
27P8212A

Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-9	SAMPLE ID: MW-9 112900	DATE: 11/29/00
SITE NAME: Clearwater TOP		SITE LOCATION: Clearwater	

PURGE DATA

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 14.85	DEPTH TO WATER (ft): 3.90	WELL CAPACITY (gal/ft): .16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =
1.7 = (14.85 - 3.90) x .16 =

10 = WC
5.2 = 3 vol
8.5 = 5 vol

PURGE METHOD: Isco Pump	PURGING INITIATED AT: 0917	PURGING ENDED AT: 0928
	PURGE RATE (gpm): .77	TOTAL VOLUME PURGED (gal): 8.5

Time	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°c)	COND. (umhos)	COLOR	Turbidity	APPEARANCE	OTHER
0919	2	5.86	17.4	739us	Tan	—	SL cldy	
0922	4	5.29	19.5	641us	//	—	//	
0924	6	5.69	19.6	576us	//	—	//	
0928	8.5	5.54	19.3	513us	//	—	//	
Sample								
1125		5.65	17.1	587us	SL Tan	—	Clear	

SAMPLING DATA

SAMPLED BY / AFFILIATION: Qore	SAMPLER(S) SIGNATURE(S): B. M[illegible]	
SAMPLING METHOD(S): Bailer	SAMPLING INITIATED AT: 1125	SAMPLING ENDED AT: 1128
FIELD DECONTAMINATION: Y N (Y circled)	FIELD-FILTERED: Y N (N circled)	DUPLICATE: Y N (N circled)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
3	CG	40ML	HCL	—	—	8021

REMARKS:

MATERIAL CODES: AG=AMBER GLASS; CG=CLEAR GLASS; HDP= HIGH DENSITY POLYETHYLENE; O=OTHER
WELL CAPACITY. 1.25"=0.06gal/ft; 2"=0.16 gal/ft; 4"=0.65 gal/ft; 6"=1.47 gal/ft; 8"=2.61 gal/ft; 12"=5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

QORE™ PROPERTY SCIENCES

QORE JOB NUMBER P8212A

Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: HSAMW-5	SAMPLE ID: HSAMW-5 112900	DATE: 11/29/00
SITE NAME: Clearwater TOP		SITE LOCATION: Clearwater	

PURGE DATA

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 11.60	DEPTH TO WATER (ft): 3.92	WELL CAPACITY (gal/ft): .16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =

1.2 = (11.60 - 3.92) x .16 =

7.6 = wc
3.6 = 3 Vol
6 = 5 Vol

PURGE METHOD: Isco Purge	PURGING INITIATED AT: 0936	PURGING ENDED AT: 0945
	PURGE RATE (gpm): .66	TOTAL VOLUME PURGED (gal): 6

Time	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°c)	COND. (umhos)	COLOR	Turbidity	APPEARANCE	OTHER
0938	2	5.52	21.1	590us	Dark Tan	—	Cldy	
0940	4	5.73	21.0	556us	"	—	"	
0945	6	5.91	20.5	551us	"	—	"	
Sample								
1140		5.62	17.6	546us	light Tan/green	—	Clear	

SAMPLING DATA

SAMPLED BY / AFFILIATION: Qore	SAMPLER(S) SIGNATURE(S): B. McElwee	
SAMPLING METHOD(S): Bailer	SAMPLING INITIATED AT: 1140	SAMPLING ENDED AT: 1142
FIELD DECONTAMINATION: Y N (Y circled)	FIELD-FILTERED: Y N (N circled)	DUPLICATE: Y N (N circled)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
3	CG	40mL	HCL	—	—	8021

REMARKS:

MATERIAL CODES: AG=AMBER GLASS; CG=CLEAR GLASS; HDP= HIGH DENSITY POLYETHYLENE; O=OTHER
WELL CAPACITY. 1.25"=0.06gal/ft; 2"=0.16 gal/ft; 4"=0.65 gal/ft; 6"=1.47 gal/ft; 8"=2.61 gal/ft; 12"=5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

QORE™ PROPERTY SCIENCES

QORE JOB NUMBER
27P8212A

Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: HSAMW-4	SAMPLE ID: HSAMW-4 112900	DATE: 11/29/00
SITE NAME: Clearwater Top		SITE LOCATION: Clearwater FL	

PURGE DATA

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 10.15	DEPTH TO WATER (ft): 7.95	WELL CAPACITY (gal/ft): .16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =
.35 = (10.15 - 7.95) x .16 =

2.2 = wc
1.0 = 3 vol
1.75 = 5 vol

PURGE METHOD: Per. Pump	PURGING INITIATED AT: 1011	PURGING ENDED AT: 1026
	PURGE RATE (gpm): .03	TOTAL VOLUME PURGED (gal): .50

Time	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°c)	COND. (umhos)	COLOR	Turbidity	APPEARANCE	OTHER
1026	.50	DRY Purge						
Sample								
1155		6.15	15.8	502us	SL Tan	—	Clear	

SAMPLING DATA

SAMPLED BY / AFFILIATION: Qore	SAMPLER(S) SIGNATURE(S): B. McKinney	
SAMPLING METHOD(S): Bailer	SAMPLING INITIATED AT: 1155	SAMPLING ENDED AT: 1158
FIELD DECONTAMINATION: (Y) N	FIELD-FILTERED: Y (N)	DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
3	CG	40ML	HCL	—	—	8021

REMARKS: Poor recharge This well, Dry Purge

MATERIAL CODES: AG=AMBER GLASS; CG=CLEAR GLASS; HDP= HIGH DENSITY POLYETHYLENE; O=OTHER
WELL CAPACITY. 1.25"=0.06gal/ft; 2"=0.16 gal/ft; 4"=0.65 gal/ft; 6"=1.47 gal/ft; 8"=2.61 gal/ft; 12"=5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

QORE™ PROPERTY SCIENCES

QORE JOB NUMBER
27-P8212A

Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW-7	SAMPLE ID: MW-7 112900	DATE: 11/29/00
SITE NAME: Clearwater Tol	SITE LOCATION: Clearwater FL.		

PURGE DATA

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 13.50	DEPTH TO WATER (ft): 4.17	WELL CAPACITY (gal/ft): .16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =

1.4 = (13.50 - 4.17) x .16 =

9.3 = WC
4.4 = 3 Vol
7 = 5 Vol

PURGE METHOD: Isco Pump	PURGING INITIATED AT: 1038	PURGING ENDED AT: 1043
	PURGE RATE (gpm): 1.0	TOTAL VOLUME PURGED (gal): 5

Time	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°c)	COND. (umhos)	COLOR	Turbidity	APPEARANCE	OTHER
1039	1.5	6.15	16.5	802us	Light Tan	—	clear	
1041	3	6.41	16.5	816us	"	—	"	
1043	5	6.41	17.0	799us	"	—	"	
Sample								
1215		6.25	15.8	717us	SL Tan	—	clear	

SAMPLING DATA

SAMPLED BY / AFFILIATION: Qore	SAMPLER(S) SIGNATURE(S): B. McGlinn	
SAMPLING METHOD(S): Bailer	SAMPLING INITIATED AT: 1215	SAMPLING ENDED AT: 1218
FIELD DECONTAMINATION: Y N	FIELD-FILTERED: Y N	DUPLICATE: Y N

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
6	CG	40 ML	HCL	—	—	8021

REMARKS:

Dupe-1 here

MATERIAL CODES: AG=AMBER GLASS; CG=CLEAR GLASS; HDP= HIGH DENSITY POLYETHYLENE; O=OTHER
WELL CAPACITY. 1.25"=0.06gal/ft; 2"=0.16 gal/ft; 4"=0.65 gal/ft; 6"=1.47 gal/ft; 8"=2.61 gal/ft; 12"=5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

APPENDIX E
STL TAMPA WEST LABORATORIES REPORT OF RESULTS

SEVERN TRENT SERVICES
6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com
STL Tampa West

LOG NO: B0-63245
Received: 03 NOV 00
Reported: 15 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

RECEIVED
TAMPA

Client PO. No.: P212

Project: Clearwater Top
Sampled By: Client
Code: 085801115
Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
63245-1	B-2 (1 FT)	11-03-00/12:15
63245-2	B-3 (1 FT)	11-03-00/12:50
63245-3	B-4 (1 FT)	11-03-00/13:20
63245-4	B-5 (1 FT)	11-03-00/14:05

PARAMETER	63245-1	63245-2	63245-3	63245-4
	B-2	B-3	B-4	B-5
Halogenated and Aromatic Volatiles (8021)				
Benzene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Bromodichloromethane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Bromoform, ug/kg dw	<29	<31	<26	<26
Bromomethane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Carbon Tetrachloride, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Chlorobenzene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Chloroethane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Chloroform, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Chloromethane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Chlorodibromomethane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
1,2-Dichlorobenzene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
1,3-Dichlorobenzene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
1,4-Dichlorobenzene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Dichlorodifluoromethane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
1,1-Dichloroethane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
1,2-Dichloroethane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
1,1-Dichloroethylene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
cis-1,2-Dichloroethylene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
trans-1,2-Dichloroethylene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
1,2-Dichloropropane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
cis-1,3-Dichloropropene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
trans-1,3-Dichloropropene, ug/kg dw	<5.7	<6.2	<5.2	<5.2

SEVERN TRENT SERVICES

STL Tampa West

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

LOG NO: B0-63245
Received: 03 NOV 00
Reported: 15 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

RECEIVED NOV 20 2000 TAMPA

Client PO. No.: P212

Project: Clearwater Top
Sampled By: Client
Code: 085801115

REPORT OF RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
63245-1	B-2 (1 FT)	11-03-00/12:15
63245-2	B-3 (1 FT)	11-03-00/12:50
63245-3	B-4 (1 FT)	11-03-00/13:20
63245-4	B-5 (1 FT)	11-03-00/14:05

PARAMETER	63245-1 (B-2)	63245-2 (B-3)	63245-3 (B-4)	63245-4 (B-5)
Ethylbenzene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Methylene Chloride, ug/kg dw	<29	<31	<26	<26
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Tetrachloroethylene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Toluene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
1,1,1-Trichloroethane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
1,1,2-Trichloroethane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Trichloroethylene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Trichlorofluoromethane, ug/kg dw	<5.7	<6.2	<5.2	<5.2
Vinyl Chloride, ug/kg dw	<5.7	<6.2	<5.2	<5.2
o-Xylene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
m&p-Xylene, ug/kg dw	<5.7	<6.2	<5.2	<5.2
2-Chloroethylvinyl Ether, ug/kg dw	<57	<62	<52	<52
Methyl Tert Butyl Ether (MTBE), ug/kg dw	<57	<62	<52	<52
RCRA Metals (6010)				
Arsenic, mg/kg dw	<0.80	<0.80	<0.80	<0.80
Barium, mg/kg dw	6.0	7.3	2.5	2.0
Cadmium, mg/kg dw	<0.50	<0.50	<0.50	<0.50
Chromium, mg/kg dw	130	32	21	26
Lead, mg/kg dw	6.2	5.5	2.5	10
Selenium, mg/kg dw	<1.0	<1.0	<1.0	<1.0
Silver, mg/kg dw	<1.0	<1.0	<1.0	<1.0
Mercury, mg/kg dw	0.028	0.027	<0.020	<0.020

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

SEVERN TRENT SERVICES

STL Tampa West

LOG NO: B0-63245
Received: 03 NOV 00
Reported: 15 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: P212

Project: Clearwater Top
Sampled By: Client
Code: 085801115

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63245-5	EB-2	11-03-00/13:30

PARAMETER	63245-5
Halogenated and Aromatic Volatiles (8021)	
Benzene, ug/l	<1.0
Bromodichloromethane, ug/l	<1.0
Bromoform, ug/l	<5.0
Bromomethane, ug/l	<1.0
Carbon Tetrachloride, ug/l	<1.0
Chlorobenzene, ug/l	<1.0
Chloroethane, ug/l	<1.0
Chloroform, ug/l	<1.0
Chloromethane, ug/l	<1.0
Chlorodibromomethane, ug/l	<1.0
1,2-Dichlorobenzene, ug/l	<1.0
1,3-Dichlorobenzene, ug/l	<1.0
1,4-Dichlorobenzene, ug/l	<1.0
Dichlorodifluoromethane, ug/l	<1.0
1,1-Dichloroethane, ug/l	<1.0
1,2-Dichloroethane, ug/l	<1.0
1,1-Dichloroethylene, ug/l	<1.0
cis-1,2-Dichloroethylene, ug/l	<1.0
trans-1,2-Dichloroethylene, ug/l	<1.0
1,2-Dichloropropane, ug/l	<1.0
cis-1,3-Dichloropropene, ug/l	<1.0
trans-1,3-Dichloropropene, ug/l	<1.0
Ethylbenzene, ug/l	<1.0
Methylene Chloride, ug/l	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

LOG NO: B0-63245
Received: 03 NOV 00
Reported: 15 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: P212

Project: Clearwater Top
Sampled By: Client
Code: 085801115

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63245-5	EB-2	11-03-00/13:30

PARAMETER	63245-5
Tetrachloroethylene, ug/l	<1.0
Toluene, ug/l	<1.0
1,1,1-Trichloroethane, ug/l	<1.0
1,1,2-Trichloroethane, ug/l	<1.0
Trichloroethylene, ug/l	<1.0
Trichlorofluoromethane, ug/l	<1.0
Vinyl Chloride, ug/l	<1.0
o-Xylene, ug/l	<1.0
m&p-Xylene, ug/l	<1.0
2-Chloroethylvinyl Ether, ug/l	<10
Methyl Tert Butyl Ether (MTBE), ug/l	<10
RCRA Metals (6010)	
Arsenic, mg/l	<0.010
Barium, mg/l	<0.010
Cadmium, mg/l	<0.0050
Chromium, mg/l	<0.010
Lead, mg/l	<0.0050
Selenium, mg/l	<0.010
Silver, mg/l	<0.010
Mercury, mg/l	<0.00020

SEVERN
TRENT
SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63245
Received: 03 NOV 00
Reported: 15 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: P212

Project: Clearwater Top
Sampled By: Client
Code: 085801115

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
63245-6	Method Blank	
63245-7	Accuracy (%Rec)	
63245-8	Precision (%RPD)	
63245-9	Date Extracted/Digested	
63245-10	Date Analyzed	

PARAMETER	63245-6	63245-7	63245-8	63245-9	63245-10
Halogenated and Aromatic Volatiles (8021)					
Benzene, ug/kg dw	<5.0	102 %	6.8 %	---	11.06.00
Bromodichloromethane, ug/kg dw	<5.0	---	---	---	11.06.00
Bromoform, ug/kg dw	<25	---	---	---	11.06.00
Bromomethane, ug/kg dw	<5.0	---	---	---	11.06.00
Carbon Tetrachloride, ug/kg dw	<5.0	---	---	---	11.06.00
Chlorobenzene, ug/kg dw	<5.0	88 %	9.1 %	---	11.06.00
Chloroethane, ug/kg dw	<5.0	---	---	---	11.06.00
Chloroform, ug/kg dw	<5.0	---	---	---	11.06.00
Chloromethane, ug/kg dw	<5.0	---	---	---	11.06.00
Chlorodibromomethane, ug/kg dw	<5.0	---	---	---	11.06.00
1,2-Dichlorobenzene, ug/kg dw	<5.0	---	---	---	11.06.00
1,3-Dichlorobenzene, ug/kg dw	<5.0	---	---	---	11.06.00
1,4-Dichlorobenzene, ug/kg dw	<5.0	---	---	---	11.06.00
Dichlorodifluoromethane, ug/kg dw	<5.0	---	---	---	11.06.00
1,1-Dichloroethane, ug/kg dw	<5.0	---	---	---	11.06.00
1,2-Dichloroethane, ug/kg dw	<5.0	---	---	---	11.06.00
1,1-Dichloroethylene, ug/kg dw	<5.0	116 %	6.9 %	---	11.06.00
cis-1,2-Dichloroethylene, ug/kg dw	<5.0	---	---	---	11.06.00
trans-1,2-Dichloroethylene, ug/kg dw	<5.0	---	---	---	11.06.00

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63245
Received: 03 NOV 00
Reported: 15 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: P212

Project: Clearwater Top
Sampled By: Client
Code: 085801115

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
63245-6	Method Blank	
63245-7	Accuracy (%Rec)	
63245-8	Precision (%RPD)	
63245-9	Date Extracted/Digested	
63245-10	Date Analyzed	

PARAMETER	63245-6	63245-7	63245-8	63245-9	63245-10
1,2-Dichloropropane, ug/kg dw	<5.0	---	---	---	11.06.00
cis-1,3-Dichloropropene, ug/kg dw	<5.0	---	---	---	11.06.00
trans-1,3-Dichloropropene, ug/kg dw	<5.0	---	---	---	11.06.00
Ethylbenzene, ug/kg dw	<5.0	---	---	---	11.06.00
Methylene Chloride, ug/kg dw	<10	---	---	---	11.06.00
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.0	---	---	---	11.06.00
Tetrachloroethylene, ug/kg dw	<5.0	---	---	---	11.06.00
Toluene, ug/kg dw	<5.0	88 %	10 %	---	11.06.00
1,1,1-Trichloroethane, ug/kg dw	<5.0	---	---	---	11.06.00
1,1,2-Trichloroethane, ug/kg dw	<5.0	---	---	---	11.06.00
Trichloroethylene, ug/kg dw	<5.0	90 %	10 %	---	11.06.00
Trichlorofluoromethane, ug/kg dw	<5.0	---	---	---	11.06.00
Vinyl Chloride, ug/kg dw	<5.0	---	---	---	11.06.00
o-Xylene, ug/kg dw	<5.0	---	---	---	11.06.00
m&p-Xylene, ug/kg dw	<5.0	---	---	---	11.06.00
2-Chloroethylvinyl Ether, ug/kg dw	<50	---	---	---	11.06.00
Methyl Tert Butyl Ether (MTBE), ug/kg dw	<50	---	---	---	11.06.00

SEVERN TRENT SERVICES

STL Tampa West

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

LOG NO: B0-63245
Received: 03 NOV 00
Reported: 15 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: P212

Project: Clearwater Top
Sampled By: Client
Code: 085801115

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
63245-6	Method Blank	
63245-7	Accuracy (%Rec)	
63245-8	Precision (%RPD)	
63245-9	Date Extracted/Digested	
63245-10	Date Analyzed	

PARAMETER	63245-6	63245-7	63245-8	63245-9	63245-10
RCRA Metals (6010)					
Arsenic, mg/kg dw	<0.80	96 %	0.32 %	11.09.00	11.13.00
Barium, mg/kg dw	<1.0	105 %	1.0 %	11.09.00	11.13.00
Cadmium, mg/kg dw	<0.50	101 %	0.30 %	11.09.00	11.13.00
Chromium, mg/kg dw	<1.0	100 %	0.30 %	11.09.00	11.13.00
Lead, mg/kg dw	<0.50	98 %	0.79 %	11.09.00	11.13.00
Selenium, mg/kg dw	<1.0	89 %	0.18 %	11.09.00	11.13.00
Silver, mg/kg dw	<1.0	100 %	1.0 %	11.09.00	11.13.00
Mercury, mg/kg dw	<0.020	102 %	4.9 %	11.10.00	11.13.00

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

SEVERN TRENT SERVICES
STL Tampa West

LOG NO: B0-63245
Received: 03 NOV 00
Reported: 15 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: P212

Project: Clearwater Top
Sampled By: Client
Code: 112301115

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
63245-11	Method Blank	
63245-12	Accuracy (%Rec)	
63245-13	Precision (%RPD)	
63245-14	Date Extracted/Digested	
63245-15	Date Analyzed	

PARAMETER	63245-11	63245-12	63245-13	63245-14	63245-15
Halogenated and Aromatic Volatiles (8021)					
Benzene, ug/l	<1.0	88 %	4.5 %	---	11.10.00
Bromodichloromethane, ug/l	<1.0	---	---	---	11.10.00
Bromoform, ug/l	<5.0	---	---	---	11.10.00
Bromomethane, ug/l	<1.0	---	---	---	11.10.00
Carbon Tetrachloride, ug/l	<1.0	---	---	---	11.10.00
Chlorobenzene, ug/l	<1.0	85 %	2.4 %	---	11.10.00
Chloroethane, ug/l	<1.0	---	---	---	11.10.00
Chloroform, ug/l	<1.0	---	---	---	11.10.00
Chloromethane, ug/l	<1.0	---	---	---	11.10.00
Chlorodibromomethane, ug/l	<1.0	---	---	---	11.10.00
1,2-Dichlorobenzene, ug/l	<1.0	---	---	---	11.10.00
1,3-Dichlorobenzene, ug/l	<1.0	---	---	---	11.10.00
1,4-Dichlorobenzene, ug/l	<1.0	---	---	---	11.10.00
Dichlorodifluoromethane, ug/l	<1.0	---	---	---	11.10.00
1,1-Dichloroethane, ug/l	<1.0	46 %	0 %	---	11.10.00
1,2-Dichloroethane, ug/l	<1.0	---	---	---	11.10.00
1,1-Dichloroethylene, ug/l	<1.0	---	---	---	11.10.00
cis-1,2-Dichloroethylene, ug/l	<1.0	---	---	---	11.10.00
trans-1,2-Dichloroethylene, ug/l	<1.0	---	---	---	11.10.00
1,2-Dichloropropane, ug/l	<1.0	---	---	---	11.10.00

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63245
Received: 03 NOV 00
Reported: 15 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: P212

Project: Clearwater Top
Sampled By: Client
Code: 112301115

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
63245-11	Method Blank	
63245-12	Accuracy (%Rec)	
63245-13	Precision (%RPD)	
63245-14	Date Extracted/Digested	
63245-15	Date Analyzed	

PARAMETER	63245-11	63245-12	63245-13	63245-14	63245-15
cis-1,3-Dichloropropene, ug/l	<1.0	---	---	---	11.10.00
trans-1,3-Dichloropropene, ug/l	<1.0	---	---	---	11.10.00
Ethylbenzene, ug/l	<1.0	---	---	---	11.10.00
Methylene Chloride, ug/l	<5.0	---	---	---	11.10.00
1,1,2,2-Tetrachloroethane, ug/l	<1.0	---	---	---	11.10.00
Tetrachloroethylene, ug/l	<1.0	---	---	---	11.10.00
Toluene, ug/l	<1.0	88 %	3.4 %	---	11.10.00
1,1,1-Trichloroethane, ug/l	<1.0	---	---	---	11.10.00
1,1,2-Trichloroethane, ug/l	<1.0	---	---	---	11.10.00
Trichloroethylene, ug/l	<1.0	105 %	9.5 %	---	11.10.00
Trichlorofluoromethane, ug/l	<1.0	---	---	---	11.10.00
Vinyl Chloride, ug/l	<1.0	---	---	---	11.10.00
o-Xylene, ug/l	<1.0	---	---	---	11.10.00
m&p-Xylene, ug/l	<1.0	---	---	---	11.10.00
2-Chloroethylvinyl Ether, ug/l	<10	---	---	---	11.10.00
Methyl Tert Butyl Ether (MTBE), ug/l	<10	---	---	---	11.10.00

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

LOG NO: B0-63245
Received: 03 NOV 00
Reported: 15 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: P212

Project: Clearwater Top
Sampled By: Client
Code: 085801115

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
63245-11	Method Blank	
63245-12	Accuracy (%Rec)	
63245-13	Precision (%RPD)	
63245-14	Date Extracted/Digested	
63245-15	Date Analyzed	

PARAMETER	63245-11	63245-12	63245-13	63245-14	63245-15
RCRA Metals (6010)					
Arsenic, mg/l	<0.010	101 %	0.70 %	11.09.00	11.13.00
Barium, mg/l	<0.010	104 %	0.48 %	11.09.00	11.13.00
Cadmium, mg/l	<0.0050	104 %	0.36 %	11.09.00	11.13.00
Chromium, mg/l	<0.010	103 %	0.97 %	11.09.00	11.13.00
Lead, mg/l	<0.0050	102 %	0.49 %	11.09.00	11.13.00
Selenium, mg/l	<0.010	96 %	1.1 %	11.09.00	11.13.00
Silver, mg/l	<0.010	103 %	0.39 %	11.09.00	11.13.00
Mercury, mg/l	<0.00020	96 %	5.2 %	11.08.00	11.13.00

Method EPA SW-846
DOH Certification # E84282

Andre Rachmaninoff, Project Manager

Final Page Of Report

003240 Serial Number 032402

Savannah Laboratories
A division of Severn Trent Laboratories, Inc.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (850) 878-3994 Fax: (850) 878-9504
900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
6712 Benjamin Rd., Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049

PROJECT REFERENCE: Clearwater Top
PROJECT NO.: P 8212
PROJECT LOCATION (STATE):
STL (LAB) PROJECT MANAGER: Andre
P.O. NUMBER:
CONTRACT NO.:
CLIENT (SITE) PM: Christie McKenzie/Joni Hill
CLIENT PHONE: 8136236646
CLIENT FAX:
CLIENT NAME: QORE
CLIENT EMAIL:
CLIENT ADDRESS: 1211 Tech Blvd.
COMPANY CONTRACTING THIS WORK (if applicable):

RECEIVED TAMPA

PAGE 1 OF

STANDARD REPORT DELIVERY ✓ DATE DUE ______
EXPEDITED REPORT DELIVERY (SURCHARGE) ○ DATE DUE ______
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE / AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)

REQUIRED ANALYSES: 8021 Encore / 8 RCRA metals / 8021

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE/GRAB	AQUEOUS	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	8021 Encore	8 RCRA metals	8021	REMARKS
11/3/00	1215	B-2 (1ft)			X			4	1		
11/3/00	12:50	B-3 (1ft)			X			4	1		
11/3/00	1320	B-4 (1ft)			X			4	1		
11/3/00	1330	EB-2		X					1	3	
11/3/00	1405	B-5 (1ft)			X			4	1		

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
[signature]	10/31/00	1700	Christie McKenzie	11/3/00	1530			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
			Bo Pallo	11/3/00	1530			

LABORATORY USE ONLY **Cooler Temp** 5°

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
[signature]	11-3-00	1637	YES	N/S	B06-3245	

ORIGINAL

LOG NO: B0-63379
Received: 15 NOV 00
Reported: 29 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

RECEIVED
2000
TAMPA

Client PO. No.: FACE/27-98212a

Project: Clearwater Top/27-8212a
Sampled By: Client
Code: 115501129
Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
63379-1	B-7 (3-4 ft)	11-15-00/15:00

PARAMETER	63379-1
Halogenated and Aromatic Volatiles (8021)	
Benzene, ug/kg dw	<7.3
Bromodichloromethane, ug/kg dw	<7.3
Bromoform, ug/kg dw	<36
Bromomethane, ug/kg dw	<7.3
Carbon Tetrachloride, ug/kg dw	<7.3
Chlorobenzene, ug/kg dw	<7.3
Chloroethane, ug/kg dw	<7.3
Chloroform, ug/kg dw	<7.3
Chloromethane, ug/kg dw	<7.3
Chlorodibromomethane, ug/kg dw	<7.3
1,2-Dichlorobenzene, ug/kg dw	<7.3
1,3-Dichlorobenzene, ug/kg dw	<7.3
1,4-Dichlorobenzene, ug/kg dw	<7.3
Dichlorodifluoromethane, ug/kg dw	<7.3
1,1-Dichloroethane, ug/kg dw	<7.3
1,2-Dichloroethane, ug/kg dw	<7.3
1,1-Dichloroethylene, ug/kg dw	<7.3
cis-1,2-Dichloroethylene, ug/kg dw	<7.3
trans-1,2-Dichloroethylene, ug/kg dw	<7.3
1,2-Dichloropropane, ug/kg dw	<7.3
cis-1,3-Dichloropropene, ug/kg dw	<7.3
trans-1,3-Dichloropropene, ug/kg dw	<7.3
Ethylbenzene, ug/kg dw	<7.3
Methylene Chloride, ug/kg dw	<36
1,1,2,2-Tetrachloroethane, ug/kg dw	<7.3

LOG NO: B0-63379
Received: 15 NOV 00
Reported: 29 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: FACE/27-98212a

Project: Clearwater Top/27-8212a
Sampled By: Client
Code: 115501129

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
63379-1	B-7 (3-4 ft)	11-15-00/15:00

PARAMETER	63379-1
Tetrachloroethylene, ug/kg dw	<7.3
Toluene, ug/kg dw	<7.3
1,1,1-Trichloroethane, ug/kg dw	<7.3
1,1,2-Trichloroethane, ug/kg dw	<7.3
Trichloroethylene, ug/kg dw	<7.3
Trichlorofluoromethane, ug/kg dw	<7.3
Vinyl Chloride, ug/kg dw	<7.3
o-Xylene, ug/kg dw	<7.3
m&p-Xylene, ug/kg dw	<7.3
2-Chloroethylvinyl Ether, ug/kg dw	<73
Methyl Tert Butyl Ether (MTBE), ug/kg dw	<73
RCRA Metals (6010)	
Arsenic, mg/kg dw	2.8
Barium, mg/kg dw	2.4
Cadmium, mg/kg dw	<0.50
Chromium, mg/kg dw	3.0
Lead, mg/kg dw	2.1
Selenium, mg/kg dw	<1.0
Silver, mg/kg dw	<1.0
Mercury, mg/kg dw	<0.020

LOG NO: B0-63379
Received: 15 NOV 00
Reported: 29 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: FACE/27-98212a

Project: Clearwater Top/27-8212a
Sampled By: Client
Code: 115501129

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
63379-2	Method Blank	
63379-3	Accuracy (%Rec)	
63379-4	Precision (%RPD)	
63379-5	Date Extracted/Digested	
63379-6	Date Analyzed	

PARAMETER	63379-2	63379-3	63379-4	63379-5	63379-6
Halogenated and Aromatic Volatiles (8021)					
Benzene, ug/kg dw	<5.0	89 %	2.2 %	---	11.16.00
Bromodichloromethane, ug/kg dw	<5.0	---	---	---	11.16.00
Bromoform, ug/kg dw	<25	---	---	---	11.16.00
Bromomethane, ug/kg dw	<5.0	---	---	---	11.16.00
Carbon Tetrachloride, ug/kg dw	<5.0	---	---	---	11.16.00
Chlorobenzene, ug/kg dw	<5.0	84 %	0 %	---	11.16.00
Chloroethane, ug/kg dw	<5.0	---	---	---	11.16.00
Chloroform, ug/kg dw	<5.0	---	---	---	11.16.00
Chloromethane, ug/kg dw	<5.0	---	---	---	11.16.00
Chlorodibromomethane, ug/kg dw	<5.0	---	---	---	11.16.00
1,2-Dichlorobenzene, ug/kg dw	<5.0	---	---	---	11.16.00
1,3-Dichlorobenzene, ug/kg dw	<5.0	---	---	---	11.16.00
1,4-Dichlorobenzene, ug/kg dw	<5.0	---	---	---	11.16.00
Dichlorodifluoromethane, ug/kg dw	<5.0	---	---	---	11.16.00
1,1-Dichloroethane, ug/kg dw	<5.0	---	---	---	11.16.00
1,2-Dichloroethane, ug/kg dw	<5.0	---	---	---	11.16.00
1,1-Dichloroethylene, ug/kg dw	<5.0	100 %	0 %	---	11.16.00
cis-1,2-Dichloroethylene, ug/kg dw	<5.0	---	---	---	11.16.00
trans-1,2-Dichloroethylene, ug/kg dw	<5.0	---	---	---	11.16.00

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63379
Received: 15 NOV 00
Reported: 29 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: FACE/27-98212a

Project: Clearwater Top/27-8212a
Sampled By: Client
Code: 115501129

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
63379-2	Method Blank	
63379-3	Accuracy (%Rec)	
63379-4	Precision (%RPD)	
63379-5	Date Extracted/Digested	
63379-6	Date Analyzed	

PARAMETER	63379-2	63379-3	63379-4	63379-5	63379-6
1,2-Dichloropropane, ug/kg dw	<5.0	---	---	---	11.16.00
cis-1,3-Dichloropropene, ug/kg dw	<5.0	---	---	---	11.16.00
trans-1,3-Dichloropropene, ug/kg dw	<5.0	---	---	---	11.16.00
Ethylbenzene, ug/kg dw	<5.0	---	---	---	11.16.00
Methylene Chloride, ug/kg dw	<10	---	---	---	11.16.00
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.0	---	---	---	11.16.00
Tetrachloroethylene, ug/kg dw	<5.0	---	---	---	11.16.00
Toluene, ug/kg dw	<5.0	77 %	2.6 %	---	11.16.00
1,1,1-Trichloroethane, ug/kg dw	<5.0	---	---	---	11.16.00
1,1,2-Trichloroethane, ug/kg dw	<5.0	---	---	---	11.16.00
Trichloroethylene, ug/kg dw	<5.0	93 %	2.2 %	---	11.16.00
Trichlorofluoromethane, ug/kg dw	<5.0	---	---	---	11.16.00
Vinyl Chloride, ug/kg dw	<5.0	---	---	---	11.16.00
o-Xylene, ug/kg dw	<5.0	---	---	---	11.16.00
m&p-Xylene, ug/kg dw	<5.0	---	---	---	11.16.00
2-Chloroethylvinyl Ether, ug/kg dw	<50	---	---	---	11.16.00
Methyl Tert Butyl Ether (MTBE), ug/kg dw	<50	---	---	---	11.16.00

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63379
Received: 15 NOV 00
Reported: 29 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: FACE/27-98212a

Project: Clearwater Top/27-8212a
Sampled By: Client
Code: 115501129

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
63379-2	Method Blank	
63379-3	Accuracy (%Rec)	
63379-4	Precision (%RPD)	
63379-5	Date Extracted/Digested	
63379-6	Date Analyzed	

PARAMETER	63379-2	63379-3	63379-4	63379-5	63379-6
RCRA Metals (6010)					
Arsenic, mg/kg dw	<0.80	97 %	1.2 %	11.21.00	11.22.00
Barium, mg/kg dw	<1.0	108 %	0.83 %	11.21.00	11.22.00
Cadmium, mg/kg dw	<0.50	102 %	1.7 %	11.21.00	11.22.00
Chromium, mg/kg dw	<1.0	107 %	1.4 %	11.21.00	11.22.00
Lead, mg/kg dw	<0.50	104 %	1.7 %	11.21.00	11.22.00
Selenium, mg/kg dw	<1.0	92 %	0.68 %	11.21.00	11.22.00
Silver, mg/kg dw	<1.0	98 %	1.4 %	11.21.00	11.22.00
Mercury, mg/kg dw	<0.020	100 %	1.0 %	11.27.00	11.27.00

Method EPA SW-846
DOH Certification # E84282

Andre Rachmaninoff, Project Manager

Final Page Of Report

063379 Serial Number 032473

STL Savannah Laboratories
A division of Severn Trent Laboratories, Inc.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (850) 878-3994 Fax: (850) 878-9504
900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
6712 Benjamin Rd., Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049

PROJECT REFERENCE: Clearwater Top.	PROJECT NO.: JT-P82129.	PROJECT LOCATION (STATE):
STL (LAB) PROJECT MANAGER: AR	P.O. NUMBER:	CONTRACT NO.:
CLIENT (SITE) PM: Christine McKenzie	CLIENT PHONE: 623-6646.	CLIENT FAX:
CLIENT NAME: QORE	CLIENT EMAIL:	
CLIENT ADDRESS: 1211 Tech Blvd.		
COMPANY CONTRACTING THIS WORK (if applicable):		

PAGE 1 OF 1

STANDARD REPORT DELIVERY: X DATE DUE ______
EXPEDITED REPORT DELIVERY (SURCHARGE): DATE DUE ______
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE / AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)

REQUIRED ANALYSES: RCRA 8. / 8021 10/20 / encores.

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE/GRAB	AQUEOUS	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	RCRA 8.	8021 10/20	encores.							REMARKS
11/15/00	1500	B-7 (3-4 ft)			X			1	1	3							

NUMBER OF CONTAINERS SUBMITTED

RECEIVED

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bo [signature]	110700	1030	Christine McKenzie	11/15/00	1555			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
			[signature]	11/15/00	1555			

LABORATORY USE ONLY **Cooler Temp** NI

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
Charles P. Volz	11-15-00	1618	YES	N/S	B06-3379	

ORIGINAL

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114
Page 1

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
63170-1	S-1	10-30-00/14:25

PARAMETER	63170-1
Halogenated and Aromatic Volatiles (8021)	
Benzene, ug/kg dw	<5.3
Bromodichloromethane, ug/kg dw	<5.3
Bromoform, ug/kg dw	<26
Bromomethane, ug/kg dw	<5.3
Carbon Tetrachloride, ug/kg dw	<5.3
Chlorobenzene, ug/kg dw	<5.3
Chloroethane, ug/kg dw	<5.3
Chloroform, ug/kg dw	<5.3
Chloromethane, ug/kg dw	<5.3
Chlorodibromomethane, ug/kg dw	<5.3
1,2-Dichlorobenzene, ug/kg dw	<5.3
1,3-Dichlorobenzene, ug/kg dw	<5.3
1,4-Dichlorobenzene, ug/kg dw	<5.3
Dichlorodifluoromethane, ug/kg dw	<5.3
1,1-Dichloroethane, ug/kg dw	<5.3
1,2-Dichloroethane, ug/kg dw	<5.3
1,1-Dichloroethylene, ug/kg dw	<5.3
cis-1,2-Dichloroethylene, ug/kg dw	<5.3
trans-1,2-Dichloroethylene, ug/kg dw	<5.3
1,2-Dichloropropane, ug/kg dw	<5.3
cis-1,3-Dichloropropene, ug/kg dw	<5.3
trans-1,3-Dichloropropene, ug/kg dw	<5.3
Ethylbenzene, ug/kg dw	<5.3
Methylene Chloride, ug/kg dw	<26
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.3

SEVERN TRENT SERVICES

STL Tampa West

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
63170-1	S-1	10-30-00/14:25

PARAMETER	63170-1
Tetrachloroethylene, ug/kg dw	<5.3
Toluene, ug/kg dw	<5.3
1,1,1-Trichloroethane, ug/kg dw	<5.3
1,1,2-Trichloroethane, ug/kg dw	<5.3
Trichloroethylene, ug/kg dw	<5.3
Trichlorofluoromethane, ug/kg dw	<5.3
Vinyl Chloride, ug/kg dw	<5.3
o-Xylene, ug/kg dw	<5.3
m&p-Xylene, ug/kg dw	<5.3
2-Chloroethylvinyl Ether, ug/kg dw	<53
Methyl Tert Butyl Ether (MTBE), ug/kg dw	<53
RCRA Metals (6010)	
Arsenic, mg/kg dw	<0.80
Barium, mg/kg dw	8.8
Cadmium, mg/kg dw	<0.50
Chromium, mg/kg dw	5.1
Lead, mg/kg dw	9.1
Selenium, mg/kg dw	<1.0
Silver, mg/kg dw	<1.0
Mercury, mg/kg dw	<0.020

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE/ TIME SAMPLED
63170-2	S-2	10-30-00/15:00

PARAMETER	63170-2
Aromatic Volatiles (8021)	
Benzene, ug/kg dw	<6.1
Chlorobenzene, ug/kg dw	<6.1
1,2-Dichlorobenzene, ug/kg dw	<6.1
1,3-Dichlorobenzene, ug/kg dw	<6.1
1,4-Dichlorobenzene, ug/kg dw	<6.1
Ethylbenzene, ug/kg dw	<6.1
Toluene, ug/kg dw	<6.1
o-Xylene, ug/kg dw	<6.1
m&p-Xylene, ug/kg dw	<6.1
Methyl Tert Butyl Ether (MTBE), ug/kg dw	<6.1

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63170-3	EB-1	10-30-00/14:15

PARAMETER	63170-3
Halogenated and Aromatic Volatiles (8021)	
Benzene, ug/l	<1.0
Bromodichloromethane, ug/l	<1.0
Bromoform, ug/l	<5.0
Bromomethane, ug/l	<1.0
Carbon Tetrachloride, ug/l	<1.0
Chlorobenzene, ug/l	<1.0
Chloroethane, ug/l	<1.0
Chloroform, ug/l	<1.0
Chloromethane, ug/l	<1.0
Chlorodibromomethane, ug/l	<1.0
1,2-Dichlorobenzene, ug/l	<1.0
1,3-Dichlorobenzene, ug/l	<1.0
1,4-Dichlorobenzene, ug/l	<1.0
Dichlorodifluoromethane, ug/l	<1.0
1,1-Dichloroethane, ug/l	<1.0
1,2-Dichloroethane, ug/l	<1.0
1,1-Dichloroethylene, ug/l	<1.0
cis-1,2-Dichloroethylene, ug/l	<1.0
trans-1,2-Dichloroethylene, ug/l	<1.0
1,2-Dichloropropane, ug/l	<1.0
cis-1,3-Dichloropropene, ug/l	<1.0
trans-1,3-Dichloropropene, ug/l	<1.0
Ethylbenzene, ug/l	<1.0
Methylene Chloride, ug/l	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63170-3	EB-1	10-30-00/14:15

PARAMETER	63170-3
Tetrachloroethylene, ug/l	<1.0
Toluene, ug/l	<1.0
1,1,1-Trichloroethane, ug/l	<1.0
1,1,2-Trichloroethane, ug/l	<1.0
Trichloroethylene, ug/l	<1.0
Trichlorofluoromethane, ug/l	<1.0
Vinyl Chloride, ug/l	<1.0
o-Xylene, ug/l	<1.0
m&p-Xylene, ug/l	<1.0
2-Chloroethylvinyl Ether, ug/l	<10
Methyl Tert Butyl Ether (MTBE), ug/l	<10
RCRA Metals (6010)	
Arsenic, mg/l	<0.010
Barium, mg/l	<0.010
Cadmium, mg/l	<0.0050
Chromium, mg/l	<0.010
Lead, mg/l	<0.0050
Selenium, mg/l	<0.010
Silver, mg/l	<0.010
Mercury, mg/l	<0.00020

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63170-4	SURFACE WATER	10-30-00/14:45

PARAMETER	63170-4
Aromatic Volatiles (8021)	
Benzene, ug/l	<1.0
Chlorobenzene, ug/l	<1.0
1,2-Dichlorobenzene, ug/l	<1.0
1,3-Dichlorobenzene, ug/l	<1.0
1,4-Dichlorobenzene, ug/l	<1.0
Ethylbenzene, ug/l	<1.0
Toluene, ug/l	<1.0
o-Xylene, ug/l	<1.0
m&p-Xylene, ug/l	<1.0

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63170-5	TRIP	10-30-00

PARAMETER	63170-5
Halogenated and Aromatic Volatiles (8021)	
Benzene, ug/l	<1.0
Bromodichloromethane, ug/l	<1.0
Bromoform, ug/l	<5.0
Bromomethane, ug/l	<1.0
Carbon Tetrachloride, ug/l	<1.0
Chlorobenzene, ug/l	<1.0
Chloroethane, ug/l	<1.0
Chloroform, ug/l	<1.0
Chloromethane, ug/l	<1.0
Chlorodibromomethane, ug/l	<1.0
1,2-Dichlorobenzene, ug/l	<1.0
1,3-Dichlorobenzene, ug/l	<1.0
1,4-Dichlorobenzene, ug/l	<1.0
Dichlorodifluoromethane, ug/l	<1.0
1,1-Dichloroethane, ug/l	<1.0
1,2-Dichloroethane, ug/l	<1.0
1,1-Dichloroethylene, ug/l	<1.0
cis-1,2-Dichloroethylene, ug/l	<1.0
trans-1,2-Dichloroethylene, ug/l	<1.0
1,2-Dichloropropane, ug/l	<1.0
cis-1,3-Dichloropropene, ug/l	<1.0
trans-1,3-Dichloropropene, ug/l	<1.0
Ethylbenzene, ug/l	<1.0
Methylene Chloride, ug/l	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63170-5	TRIP	10-30-00

PARAMETER	63170-5
Tetrachloroethylene, ug/l	<1.0
Toluene, ug/l	<1.0
1,1,1-Trichloroethane, ug/l	<1.0
1,1,2-Trichloroethane, ug/l	<1.0
Trichloroethylene, ug/l	<1.0
Trichlorofluoromethane, ug/l	<1.0
Vinyl Chloride, ug/l	<1.0
o-Xylene, ug/l	<1.0
m&p-Xylene, ug/l	<1.0
2-Chloroethylvinyl Ether, ug/l	<10
Methyl Tert Butyl Ether (MTBE), ug/l	<10

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

SEVERN TRENT SERVICES

STL Tampa West

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
63170-6	Method Blank	
63170-7	Accuracy (%Rec)	
63170-8	Precision (%RPD)	
63170-9	Date Extracted/Digested	
63170-10	Date Analyzed	

PARAMETER	63170-6	63170-7	63170-8	63170-9	63170-10
Halogenated and Aromatic Volatiles (8021)					
Benzene, ug/kg dw	<5.0	112 %	11 %	---	11.02.00
Bromodichloromethane, ug/kg dw	<5.0	---	---	---	11.02.00
Bromoform, ug/kg dw	<25	---	---	---	11.02.00
Bromomethane, ug/kg dw	<5.0	---	---	---	11.02.00
Carbon Tetrachloride, ug/kg dw	<5.0	---	---	---	11.02.00
Chlorobenzene, ug/kg dw	<5.0	97 %	15 %	---	11.02.00
Chloroethane, ug/kg dw	<5.0	---	---	---	11.02.00
Chloroform, ug/kg dw	<5.0	---	---	---	11.02.00
Chloromethane, ug/kg dw	<5.0	---	---	---	11.02.00
Chlorodibromomethane, ug/kg dw	<5.0	---	---	---	11.02.00
1,2-Dichlorobenzene, ug/kg dw	<5.0	---	---	---	11.02.00
1,3-Dichlorobenzene, ug/kg dw	<5.0	---	---	---	11.02.00
1,4-Dichlorobenzene, ug/kg dw	<5.0	---	---	---	11.02.00
Dichlorodifluoromethane, ug/kg dw	<5.0	---	---	---	11.02.00
1,1-Dichloroethane, ug/kg dw	<5.0	---	---	---	11.02.00
1,2-Dichloroethane, ug/kg dw	<5.0	---	---	---	11.02.00
1,1-Dichloroethylene, ug/kg dw	<5.0	142 %	2.9 %	---	11.02.00
cis-1,2-Dichloroethylene, ug/kg dw	<5.0	---	---	---	11.02.00
trans-1,2-Dichloroethylene, ug/kg dw	<5.0	---	---	---	11.02.00

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
63170-6	Method Blank	
63170-7	Accuracy (%Rec)	
63170-8	Precision (%RPD)	
63170-9	Date Extracted/Digested	
63170-10	Date Analyzed	

PARAMETER	63170-6	63170-7	63170-8	63170-9	63170-10
1,2-Dichloropropane, ug/kg dw	<5.0	---	---	---	11.02.00
cis-1,3-Dichloropropene, ug/kg dw	<5.0	---	---	---	11.02.00
trans-1,3-Dichloropropene, ug/kg dw	<5.0	---	---	---	11.02.00
Ethylbenzene, ug/kg dw	<5.0	---	---	---	11.02.00
Methylene Chloride, ug/kg dw	<10	---	---	---	11.02.00
1,1,2,2-Tetrachloroethane, ug/kg dw	<5.0	---	---	---	11.02.00
Tetrachloroethylene, ug/kg dw	<5.0	---	---	---	11.02.00
Toluene, ug/kg dw	<5.0	94 %	13 %	---	11.02.00
1,1,1-Trichloroethane, ug/kg dw	<5.0	---	---	---	11.02.00
1,1,2-Trichloroethane, ug/kg dw	<5.0	---	---	---	11.02.00
Trichloroethylene, ug/kg dw	<5.0	108 %	11 %	---	11.02.00
Trichlorofluoromethane, ug/kg dw	<5.0	---	---	---	11.02.00
Vinyl Chloride, ug/kg dw	<5.0	---	---	---	11.02.00
o-Xylene, ug/kg dw	<5.0	---	---	---	11.02.00
m&p-Xylene, ug/kg dw	<5.0	---	---	---	11.02.00
2-Chloroethylvinyl Ether, ug/kg dw	<50	---	---	---	11.02.00
Methyl Tert Butyl Ether (MTBE), ug/kg dw	<50	---	---	---	11.02.00

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID	DATE/ TIME SAMPLED
63170-6	Method Blank	
63170-7	Accuracy (%Rec)	
63170-8	Precision (%RPD)	
63170-9	Date Extracted/Digested	
63170-10	Date Analyzed	

PARAMETER	63170-6	63170-7	63170-8	63170-9	63170-10
RCRA Metals (6010)					
Arsenic, mg/kg dw	<0.80	85 %	1.4 %	11.02.00	11.04.00
Barium, mg/kg dw	<1.0	103 %	0.87 %	11.02.00	11.04.00
Cadmium, mg/kg dw	<0.50	97 %	1.4 %	11.02.00	11.04.00
Chromium, mg/kg dw	<1.0	95 %	1.7 %	11.02.00	11.04.00
Lead, mg/kg dw	<0.50	91 %	1.1 %	11.02.00	11.04.00
Selenium, mg/kg dw	<1.0	81 %	4.4 %	11.02.00	11.04.00
Silver, mg/kg dw	<1.0	101 %	1.3 %	11.02.00	11.04.00
Mercury, mg/kg dw	<0.020	112 %	13 %	11.07.00	11.08.00

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
63170-11	Method Blank	
63170-12	Accuracy (%Rec)	
63170-13	Precision (%RPD)	
63170-14	Date Extracted/Digested	
63170-15	Date Analyzed	

PARAMETER	63170-11	63170-12	63170-13	63170-14	63170-15
Halogenated and Aromatic Volatiles (8021)					
Benzene, ug/l	<1.0	94 %	0 %	---	11.02.00
Bromodichloromethane, ug/l	<1.0	---	---	---	11.02.00
Bromoform, ug/l	<5.0	---	---	---	11.02.00
Bromomethane, ug/l	<1.0	---	---	---	11.02.00
Carbon Tetrachloride, ug/l	<1.0	---	---	---	11.02.00
Chlorobenzene, ug/l	<1.0	85 %	2.5 %	---	11.02.00
Chloroethane, ug/l	<1.0	---	---	---	11.02.00
Chloroform, ug/l	<1.0	---	---	---	11.02.00
Chloromethane, ug/l	<1.0	---	---	---	11.02.00
Chlorodibromomethane, ug/l	<1.0	---	---	---	11.02.00
1,2-Dichlorobenzene, ug/l	<1.0	---	---	---	11.02.00
1,3-Dichlorobenzene, ug/l	<1.0	---	---	---	11.02.00
1,4-Dichlorobenzene, ug/l	<1.0	---	---	---	11.02.00
Dichlorodifluoromethane, ug/l	<1.0	---	---	---	11.02.00
1,1-Dichloroethane, ug/l	<1.0	---	---	---	11.02.00
1,2-Dichloroethane, ug/l	<1.0	---	---	---	11.02.00
1,1-Dichloroethylene, ug/l	<1.0	100 %	20 %	---	11.02.00
cis-1,2-Dichloroethylene, ug/l	<1.0	---	---	---	11.02.00
trans-1,2-Dichloroethylene, ug/l	<1.0	---	---	---	11.02.00
1,2-Dichloropropane, ug/l	<1.0	---	---	---	11.02.00

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

SEVERN TRENT SERVICES
STL Tampa West

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
63170-11	Method Blank	
63170-12	Accuracy (%Rec)	
63170-13	Precision (%RPD)	
63170-14	Date Extracted/Digested	
63170-15	Date Analyzed	

PARAMETER	63170-11	63170-12	63170-13	63170-14	63170-15
cis-1,3-Dichloropropene, ug/l	<1.0	---	---	---	11.02.00
trans-1,3-Dichloropropene, ug/l	<1.0	---	---	---	11.02.00
Ethylbenzene, ug/l	<1.0	---	---	---	11.02.00
Methylene Chloride, ug/l	<5.0	---	---	---	11.02.00
1,1,2,2-Tetrachloroethane, ug/l	<1.0	---	---	---	11.02.00
Tetrachloroethylene, ug/l	<1.0	---	---	---	11.02.00
Toluene, ug/l	<1.0	81 %	0 %	---	11.02.00
1,1,1-Trichloroethane, ug/l	<1.0	---	---	---	11.02.00
1,1,2-Trichloroethane, ug/l	<1.0	---	---	---	11.02.00
Trichloroethylene, ug/l	<1.0	105 %	9.5 %	---	11.02.00
Trichlorofluoromethane, ug/l	<1.0	---	---	---	11.02.00
Vinyl Chloride, ug/l	<1.0	---	---	---	11.02.00
o-Xylene, ug/l	<1.0	---	---	---	11.02.00
m&p-Xylene, ug/l	<1.0	---	---	---	11.02.00
2-Chloroethylvinyl Ether, ug/l	<10	---	---	---	11.02.00
Methyl Tert Butyl Ether (MTBE), ug/l	<10	---	---	---	11.02.00

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63170
Received: 31 OCT 00
Reported: 14 NOV 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Project: Clearwater Top
Sampled By: Client
Code: 154301114

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
63170-11	Method Blank	
63170-12	Accuracy (%Rec)	
63170-13	Precision (%RPD)	
63170-14	Date Extracted/Digested	
63170-15	Date Analyzed	

PARAMETER	63170-11	63170-12	63170-13	63170-14	63170-15
RCRA Metals (6010)					
Arsenic, mg/l	<0.010	99 %	1.4 %	11.05.00	11.06.00
Barium, mg/l	<0.010	105 %	1.1 %	11.05.00	11.06.00
Cadmium, mg/l	<0.0050	104 %	0.58 %	11.05.00	11.06.00
Chromium, mg/l	<0.010	100 %	0.49 %	11.05.00	11.06.00
Lead, mg/l	<0.0050	100 %	0.67 %	11.05.00	11.06.00
Selenium, mg/l	<0.010	98 %	1.3 %	11.05.00	11.06.00
Silver, mg/l	<0.010	102 %	0.98 %	11.05.00	11.06.00
Mercury, mg/l	<0.00020	92 %	14 %	11.04.00	11.06.00

Method EPA SW-846
DOH Certification # E84282

Andre Rachmaninoff, Project Manager

Final Page Of Report

063170 Serial Number 052205

STL Savannah Laboratories
A division of Severn Trent Laboratories, Inc.

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

- ◯ 5102 LaRoche Avenue, Savannah, GA 31404 Phone: (912) 354-7858 Fax: (912) 352-0165
- ◯ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 Phone: (850) 878-3994 Fax: (850) 878-9504
- ◯ 900 Lakeside Drive, Mobile, AL 36693 Phone: (334) 666-6633 Fax: (334) 666-6696
- ☒ 6712 Benjamin Rd., Suite 100, Tampa, FL 33634 Phone: (813) 885-7427 Fax: (813) 885-7049

RECEIVED NOV 1 2000 TAMPA

PROJECT REFERENCE: Clearwater Top
PROJECT NO.:
PROJECT LOCATION (STATE): FL
STL (LAB) PROJECT MANAGER: [illegible]
P.O. NUMBER: —
CONTRACT NO.: —
CLIENT (SITE) PM: Christie McKenzie
CLIENT PHONE: 813-623-6646
CLIENT FAX: 623-3795
CLIENT NAME: QORE
CLIENT EMAIL:
CLIENT ADDRESS: Tampa, FL 33619
COMPANY CONTRACTING THIS WORK (if applicable): —

PAGE 1 OF 1

STANDARD REPORT DELIVERY ☒
DATE DUE ______
EXPEDITED REPORT DELIVERY (SURCHARGE) ◯
DATE DUE ______
NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

MATRIX TYPE: COMPOSITE (C) OR GRAB (G) INDICATE / AQUEOUS (WATER) / SOLID OR SEMISOLID / AIR / NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)

REQUIRED ANALYSES / NUMBER OF CONTAINERS SUBMITTED: 8021 (Full) / 8021 (Aromatics) / RCRA

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	C/G	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID	8021 (Full)	8021 (Aromatics)	RCRA								REMARKS
10-30-00	1425	S-1			X			~~4~~		1								
↓	1500	S-2			X				4									
	1415	EB-1		X				3		2								
↓	1445	Surface Water		X					3									
		Trip		X				3										

GJD

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bo Pollo	102300	0900	[signature]	10-30-00	1710			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
[signature]	10-30-00	0800	Bo Pollo	103100	0900			

LABORATORY USE ONLY **Cooler Temp** 4°

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
[signature]	10-31-00	1049	YES	N/S	B06-3170	

ORIGINAL

SEVERN TRENT SERVICES

STL Tampa West

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

RECEIVED
DEC 14 2000
TAMPA

LOG NO: B0-63509
Received: 30 NOV 00
Reported: 06 DEC 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: FACE/27-P8212A

Project: 27-P8212A/Clearwater Top
Sampled By: Client
Code: 120901213

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63509-1	MW-8	11-29-00/11:10
63509-2	MW-9	11-29-00/11:25
63509-3	HSA MW-5	11-29-00/11:40
63509-4	HSA MW-4	11-29-00/11:55
63509-5	MW-7	11-29-00/12:15

PARAMETER	63509-1 MW-8	63509-2 MW-9	63509-3 HSA MW-5	63509-4 HSA MW-4	63509-5 MW-7
Halogenated and Aromatic Volatiles (8021)					
Benzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane, ug/l	1.4	<1.0	<1.0	<1.0	<1.0
Bromoform, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Carbon Tetrachloride, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene, ug/l	<1.0	<1.0	<1.0	3.3	36
Chloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform, ug/l	10	3.9	<1.0	<1.0	<1.0
Chloromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	28	78
1,3-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	<1.0	5.5
1,4-Dichlorobenzene, ug/l	<1.0	<1.0	<1.0	3.5	28
Dichlorodifluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane, ug/l	<1.0	41	<1.0	<1.0	2.4
1,2-Dichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethylene, ug/l	<1.0	2.0	<1.0	<1.0	2.2
cis-1,2-Dichloroethylene, ug/l	<1.0	<1.0	<1.0	1000*F42	4200*F42
trans-1,2-Dichloroethylene, ug/l	<1.0	<1.0	<1.0	59	48
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0

LOG NO: B0-63509
Received: 30 NOV 00
Reported: 06 DEC 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: FACE/27-P8212A

Project: 27-P8212A/Clearwater Top
Sampled By: Client
Code: 13210126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63509-1	MW-8	11-29-00/11:10
63509-2	MW-9	11-29-00/11:25
63509-3	HSA MW-5	11-29-00/11:40
63509-4	HSA MW-4	11-29-00/11:55
63509-5	MW-7	11-29-00/12:15

	MW-8	MW-9	HSA MW-5	HSA MW-4	MW-7
PARAMETER	63509-1	63509-2	63509-3	63509-4	63509-5
cis-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride, ug/l	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethylene, ug/l	<1.0	<1.0	<1.0	3.2	300*F42
Toluene, ug/l	<1.0	<1.0	<1.0	<1.0	2.8
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	<1.0	<1.0	<1.0	<1.0	170*F42
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride, ug/l	<1.0	<1.0	<1.0	<1.0	4.8
o-Xylene, ug/l	<1.0	<1.0	<1.0	<1.0	1.2
m&p-Xylene, ug/l	<1.0	<1.0	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether, ug/l	<10	<10	<10	<10	<10
Methyl Tert Butyl Ether (MTBE), ug/l	<10	<10	<10	<10	<10

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63509
Received: 30 NOV 00
Reported: 06 DEC 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: FACE/27-P8212A

Project: 27-P8212A/Clearwater Top
Sampled By: Client
Code: 13210126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63509-6	EB-1	11-29-00/11:05
63509-7	DUPE-1	11-29-00
63509-8	HSA MW-7	11-30-00/10:12 HSA MW-7

PARAMETER	63509-6	63509-7	63509-8	
Halogenated and Aromatic Volatiles (8021)				
Benzene, ug/l	<1.0	<1.0	<1.0	
Bromodichloromethane, ug/l	<1.0	<1.0	<1.0	
Bromoform, ug/l	<5.0	<5.0	<5.0	
Bromomethane, ug/l	<1.0	<1.0	<1.0	
Carbon Tetrachloride, ug/l	<1.0	<1.0	<1.0	
Chlorobenzene, ug/l	<1.0	53 36.	<1.0	38.2
Chloroethane, ug/l	<1.0	<1.0	<1.0	
Chloroform, ug/l	<1.0	<1.0	<1.0	
Chloromethane, ug/l	<1.0	<1.0	<1.0	
Chlorodibromomethane, ug/l	<1.0	<1.0	<1.0	
1,2-Dichlorobenzene, ug/l	<1.0	91*F42 26	<1.0	
1,3-Dichlorobenzene, ug/l	<1.0	6.5 5.5	<1.0	16
1,4-Dichlorobenzene, ug/l	<1.0	29 78	<1.0	521.91
Dichlorodifluoromethane, ug/l	<1.0	<1.0	<1.0	
1,1-Dichloroethane, ug/l	<1.0	2.3 2.4	<1.0	
1,2-Dichloroethane, ug/l	<1.0	<1.0 ?	<1.0	
1,1-Dichloroethylene, ug/l	<1.0	1.8 2.2	<1.0	
cis-1,2-Dichloroethylene, ug/l	<1.0	3700*F42 4200	<1.0	950.52
trans-1,2-Dichloroethylene, ug/l	<1.0	40 48	<1.0	
1,2-Dichloropropane, ug/l	<1.0	<1.0	<1.0	
cis-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	
trans-1,3-Dichloropropene, ug/l	<1.0	<1.0	<1.0	
Ethylbenzene, ug/l	<1.0	<1.0	<1.0	

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63509
Received: 30 NOV 00
Reported: 06 DEC 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: FACE/27-P8212A

Project: 27-P8212A/Clearwater Top
Sampled By: Client
Code: 13210126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63509-6	EB-1	11-29-00/11:05
63509-7	DUPE-1	11-29-00
63509-8	HSA MW-7	11-30-00/10:12

PARAMETER	63509-6	63509-7	63509-8
Methylene Chloride, ug/l	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0	<1.0	<1.0
Tetrachloroethylene, ug/l	<1.0	300*F42 300	<1.0
Toluene, ug/l	<1.0	2.7	<1.0
1,1,1-Trichloroethane, ug/l	<1.0	<1.0	<1.0
1,1,2-Trichloroethane, ug/l	<1.0	<1.0	<1.0
Trichloroethylene, ug/l	<1.0	180*F42 170.	<1.0
Trichlorofluoromethane, ug/l	<1.0	<1.0	<1.0
Vinyl Chloride, ug/l	<1.0	4.0 4.8	<1.0
o-Xylene, ug/l	<1.0	1.2 1.2.	<1.0
m&p-Xylene, ug/l	<1.0	<1.0	<1.0
2-Chloroethylvinyl Ether, ug/l	<10	<10	<10
Methyl Tert Butyl Ether (MTBE), ug/l	<10	<10	<10

SEVERN TRENT SERVICES

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

STL Tampa West

LOG NO: B0-63509
Received: 30 NOV 00
Reported: 06 DEC 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: FACE/27-P8212A

Project: 27-P8212A/Clearwater Top
Sampled By: Client
Code: 08390126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63509-9	TRIP	11-30-00

PARAMETER	63509-9
Halogenated and Aromatic Volatiles (8021)	
Benzene, ug/l	<1.0
Bromodichloromethane, ug/l	<1.0
Bromoform, ug/l	<5.0
Bromomethane, ug/l	<1.0
Carbon Tetrachloride, ug/l	<1.0
Chlorobenzene, ug/l	<1.0
Chloroethane, ug/l	<1.0
Chloroform, ug/l	<1.0
Chloromethane, ug/l	<1.0
Chlorodibromomethane, ug/l	<1.0
1,2-Dichlorobenzene, ug/l	<1.0
1,3-Dichlorobenzene, ug/l	<1.0
1,4-Dichlorobenzene, ug/l	<1.0
Dichlorodifluoromethane, ug/l	<1.0
1,1-Dichloroethane, ug/l	<1.0
1,2-Dichloroethane, ug/l	<1.0
1,1-Dichloroethylene, ug/l	<1.0
cis-1,2-Dichloroethylene, ug/l	<1.0
trans-1,2-Dichloroethylene, ug/l	<1.0
1,2-Dichloropropane, ug/l	<1.0
cis-1,3-Dichloropropene, ug/l	<1.0
trans-1,3-Dichloropropene, ug/l	<1.0
Ethylbenzene, ug/l	<1.0
Methylene Chloride, ug/l	<5.0
1,1,2,2-Tetrachloroethane, ug/l	<1.0

6712 Benjamin Road • Suite 100 • Tampa, FL 33634 • Tel: 813 885 7427 • Fax: 813 885 7049 • www.stl-inc.com

SEVERN TRENT SERVICES

STL Tampa West

LOG NO: B0-63509
Received: 30 NOV 00
Reported: 06 DEC 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: FACE/27-P8212A

Project: 27-P8212A/Clearwater Top
Sampled By: Client
Code: 08390126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE/ TIME SAMPLED
63509-9	TRIP	11-30-00

PARAMETER	63509-9
Tetrachloroethylene, ug/l	<1.0
Toluene, ug/l	<1.0
1,1,1-Trichloroethane, ug/l	<1.0
1,1,2-Trichloroethane, ug/l	<1.0
Trichloroethylene, ug/l	<1.0
Trichlorofluoromethane, ug/l	<1.0
Vinyl Chloride, ug/l	<1.0
o-Xylene, ug/l	<1.0
m&p-Xylene, ug/l	<1.0
2-Chloroethylvinyl Ether, ug/l	<10
Methyl Tert Butyl Ether (MTBE), ug/l	<10

LOG NO: B0-63509
Received: 30 NOV 00
Reported: 06 DEC 00

Ms. Christine McKenzie
QORE Property Sciences
1211 Tech Boulevard, Suite 200
Tampa, FL 33619

Client PO. No.: FACE/27-P8212A

Project: 27-P8212A/Clearwater Top
Sampled By: Client
Code: 08390126

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE/ TIME SAMPLED
63509-10	Method Blank	
63509-11	Accuracy (%Rec)	
63509-12	Precision (%RPD)	
63509-13	Date Analyzed	

PARAMETER	63509-10	63509-11	63509-12	63509-13
Halogenated and Aromatic Volatiles (8021)				
Benzene, ug/l	<1.0	95 %	1.0 %	12.01.00
Bromodichloromethane, ug/l	<1.0	---	---	12.01.00
Bromoform, ug/l	<5.0	---	---	12.01.00
Bromomethane, ug/l	<1.0	---	---	12.01.00
Carbon Tetrachloride, ug/l	<1.0	---	---	12.01.00
Chlorobenzene, ug/l	<1.0	83 %	4.8 %	12.01.00
Chloroethane, ug/l	<1.0	---	---	12.01.00
Chloroform, ug/l	<1.0	---	---	12.01.00
Chloromethane, ug/l	<1.0	---	---	12.01.00
Chlorodibromomethane, ug/l	<1.0	---	---	12.01.00
1,2-Dichlorobenzene, ug/l	<1.0	---	---	12.01.00
1,3-Dichlorobenzene, ug/l	<1.0	---	---	12.01.00
1,4-Dichlorobenzene, ug/l	<1.0	---	---	12.01.00
Dichlorodifluoromethane, ug/l	<1.0	---	---	12.01.00
1,1-Dichloroethane, ug/l	<1.0	---	---	12.01.00
1,2-Dichloroethane, ug/l	<1.0	---	---	12.01.00
1,1-Dichloroethylene, ug/l	<1.0	86 %	13 %	12.01.00
cis-1,2-Dichloroethylene, ug/l	<1.0	---	---	12.01.00
trans-1,2-Dichloroethylene, ug/l	<1.0	---	---	12.01.00
1,2-Dichloropropane, ug/l	<1.0	---	---	12.01.00
cis-1,3-Dichloropropene, ug/l	<1.0	---	---	12.01.00
trans-1,3-Dichloropropene, ug/l	<1.0	---	---	12.01.00

063509 Serial Number 052021

STL Savannah Laboratories
a division of Severn Trent Laboratories, Inc

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

- ○ 5102 LaRoche Avenue, Savannah, GA 31404 — Phone: (912) 354-7858 — Fax: (912) 352-0165
- ○ 2846 Industrial Plaza Drive, Tallahassee, FL 32301 — Phone: (850) 878-3994 — Fax: (850) 878-9504
- ○ 900 Lakeside Drive, Mobile, AL 36693 — Phone: (334) 666-6633 — Fax: (334) 666-6696
- ⊗ 6712 Benjamin Rd., Suite 100, Tampa, FL 33634 — Phone: (813) 885-7427 — Fax: (813) 885-7049

PROJECT REFERENCE: 27P8212A	PROJECT NO.: Clearwater ToP	PROJECT LOCATION (STATE): FL
STL (LAB) PROJECT MANAGER: AR	P.O. NUMBER: —	CONTRACT NO.: —
CLIENT (SITE) PM: C. McKenzie	CLIENT PHONE: 623-6646	CLIENT FAX: 623-3795
CLIENT NAME: Qore Inc.	CLIENT EMAIL: —	
CLIENT ADDRESS: Tampa FL. 33619		
COMPANY CONTRACTING THIS WORK (if applicable):		

PAGE 1 OF 1

STANDARD REPORT DELIVERY ○ DATE DUE ______

EXPEDITED REPORT DELIVERY (SURCHARGE) ○ DATE DUE ______

NUMBER OF COOLERS SUBMITTED PER SHIPMENT:

REQUIRED ANALYSES: Volatile halocarbons / volatile aromatics (8021) — HCL

RECEIVED DEC 8 2000 TAMPA

SAMPLE DATE	SAMPLE TIME	SAMPLE IDENTIFICATION	COMPOSITE (C) OR GRAB (G) INDICATE	AQUEOUS (WATER)	SOLID OR SEMISOLID	AIR	NONAQUEOUS LIQUID (OIL, SOLVENT, ETC)	Volatile halocarbons / volatile aromatics 8021 (NUMBER OF CONTAINERS SUBMITTED)	REMARKS
—	—	Trip		X				3	
11/29/00	1110	MW-8 112900		X				3	
↓	1125	MW-9 112900		X				3	
	1140	HSA MW-5 112900		X				3	
	1155	HSA MW-4 112900		X				3	
	1215	MW-7 112900		X				3	
	1105	EB-1		X				3	
↓	—	Dupe-1		X				3	
11/30/00	1012	HSA MW-7 113000		X				3	

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Bo P[illegible]	11/21/00	1000	B. McKenzie	11/30/00	1101			
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**
B. McKenzie	11/28/00	/	[illegible signature]	11-30-00	1101			

LABORATORY USE ONLY **Cooler Temp** 4.0

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	STL-SL LOG NO.	LABORATORY REMARKS:
[illegible signature]	11-30-00	1108	YES	NS	836-3509	

ORIGINAL

Department of Environmental Protection

Jeb Bush
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

David B. Struhs
Secretary

June 24, 2002

Ms. Ruth Fedorsyn,
Clearwater Top, Inc.,
P.O. Box 5212,
Clearwater, Florida 34618-5212

Re: Accurate Plating/Clearwater Top, Inc. 1937 Calumet Street, Clearwater, Pinellas County, Florida

Dear Ms. Fedorsyn:

The Florida Department of Environmental Protection (the Department) provided a response dated March 28, 2002 to the November 9, 2001 letter and requested a response within 30 days of letter receipt (on or about April 28, 2002). To date the Department has not received a response to its March 28, 2002 letter. Please provide a response to the March 28, 2002 letter within 15 days of letter receipt. Please note, this is the Department's second request for a response. Failure to respond may result in the initiation of enforcement proceedings.

If you have questions or concerns regarding the above, please contact me at (813)-744-6100, ext. 474.

Sincerely yours,

Laura J. Herron

Laura J. Herron, CHMM, REM
Environmental Specialist III
Bureau of Waste Cleanup

cc: David Tarbert, OGC
Mr. John Hull, P.G., QORE Property Sciences, 1211 Tech Boulevard, Suite 200, Tampa, Florida 33619

Department of Environmental Protection

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

Jeb Bush
Governor

David B. Struhs
Secretary

March 28, 2002

Ms. Ruth Fedorsyn,
Clearwater Top, Inc.,
P.O. Box 5212,
Clearwater, Florida 34618-5212

Re: Response to Department's February 22, 2001 letter, dated November 9, 2001, received November 16, 2001 Contamination Assessment Report, dated and received December 18, 2000, Accurate Plating/Clearwater Top, Inc. 1937 Calumet Street, Clearwater, Pinellas County, Florida

Dear Ms. Fedorsyn:

The Florida Department of Environmental Protection (the Department) has reviewed the above referenced response and offers the following comments:

Contamination Assessment Completion Comments:

Responses to comments 1, 2, 7, 8, and 10 are acceptable:

3. Is the location of sediment sample S-2 as provided in the Contamination Assessment Report prepared by QORE, Inc. in the same location as S-2 provided in HSA's December 21, 1993 report? A sample location figure was not provided for the December 21, 1993 report. If so, please provide documentation and the response to this comment would be acceptable.
4. As stated previously, a soil boring should be installed near monitor well MW-7 <u>since this appears to be the area with the highest concentration of ground water contamination</u>. Soil samples should be screened in discrete intervals from the land surface to the ground water table using an organic vapor analyzer equipped with a flame ionization detector (OVA/FID) to assess the sample with the highest reading and this soil sample should be sent to the laboratory for analysis of 8010/8020 (halogenated volatile organics/aromatic volatile organics) and the 8 RCRA metals.
5. Soil samples should be collected from the area near boring B-2 at the 2 feet below land surface (bls) interval and analyzed for chromium because the chromium concentration detected at one foot below land surface (130 mg/kg) exceeds the leachability risk based soil guidance concentration (RBSGC) for chromium of 38 mg/kg. A soil sample from the area near B-7 should be collected 1-2 foot below land surface interval to evaluate if arsenic is present as a surface soil contaminant because it was detected at the 3 to 4 foot depth interval at a concentration of 2.8 mg/kg which is elevated above the residential RBSGC of 0.8 mg/kg. The Department must be concerned with all contaminants that exceed the RBSGCs
6. It appears monitor well HSAMW-3 was replaced with monitor well MW-7 and abandoned on October 29, 1998. Was this well abandoned according to the Southwest Florida Water Management District (SWFWMD) well abandonment procedures? Monitor wells HSAMW-1, HSAMW-2 and HSAMW-6 do not appear to be included on Plate 2 "Site Layout Map" in the Contamination Assessment Report. Why can't these wells be abandoned prior to completion of the contamination assessment since they cannot be located or used for contamination assessment purposes?

Ms. Ruth Fedorsyn
Accurate Plating/Clearwater Top, Inc.

9. This comment does not relate to comment No. 8. A shallow monitor well should be proposed on the eastern portion of the property due to the detection of 1,1 –dichloroethane in monitor well MW-9 of 41 ug/l. Although this is less than the ground water cleanup target level (GWCTL) of 70 ug/l it is close to the GWCTL. This may be resolved by resampling MW-9 for volatile organics to determine current concentrations.

Specific Comments:

Responses to comments 1 through 4, 7, 8, 9, 10, 14 through 23, 26 and 27 are acceptable.

5. The response to this comment as referenced per the July 13, 2000 letter references soil samples collected during piezometer installation based on OVA/FID results. This response does not mention soil samples based on OVA/FID results during permanent monitor well installation. Please explain why OVA/FID readings were not obtained during the installation of monitor well MW-7.
6. Please refer to the response to comment no. 4 for the contamination assessment completion comments above.
11. The Department does not appear to have the laboratory analytical results for the soil sample collected from soil boring B-6 that was analyzed for EPA Method 8021. Why wasn't a soil sample collected from B-6 and analyzed for the 8 RCRA metals?
12. Please refer to the response to comment no. 5 for the contamination assessment completion comments above.
13. Please refer to the response to comment no. 5 for the contamination assessment completion comments above.
24. Please provide a response as to how a ground water sample was collected from HSAMW-4 when it was reported to have purged "dry" on the water sample log in Appendix D?
25. Please refer to the response to comment no. 6 for the contamination assessment completion comments above.
28. Please refer to the response to comment no. 9 for the contamination assessment completion comments above.

Please provide a response to the above comments within 30 days of receipt of this letter. A recommendation for either No further Action (NFA), a Monitoring Only Plan (MOP), a Risk Assessment/Justification proposal (RAJ), a Feasibility Study (FS) or remedial actions requiring a Remedial Action Plan (RAP) should be provided with the response to this letter. Please note, submittals to the Department must bear a signature and seal of a State of Florida licensed professional geologist.

If you have questions or concerns regarding the above, please contact me at (813)-744-6100, ext. 474.

Sincerely yours,

Laura J. Herron

Laura J. Herron, CHMM, REM
Environmental Specialist III
Bureau of Waste Cleanup

cc: Mr. John Hull, P.G., QORE Property Sciences, 1211 Tech Boulevard, Suite 200, Tampa, Florida 33619

QORE

PROPERTY SCIENCES

November 9, 2001

Florida Department of Environmental Protection
Southwest Direct
3804 Coconut Palm Drive
Tampa, Florida 33619

D.E.P.
NOV 16 2001
Southwest District Tampa

Attention: Ms. Laura Herron, CHMM, REM
Environmental Specialist III
Bureau of Waste Cleanup

Re: Response to FDEP Comments
Accurate Plating/Clearwater Top, Inc.
1937 Calumet Street
Clearwater, Florida

Dear Ms. Herron:

On behalf of Clearwater Top, Inc., QORE, Inc. (QORE) is pleased to present responses to the February 22, 2001 Florida Department of Environmental Protection (FDEP) comment letter regarding QORE's December 18, 2000 Contamination Assessment Report (CAR). QORE's responses are listed below in the order of FDEP's comments. FDEP's comment letter is attached for reference.

1. QORE will attempt to access the contents of the onsite septic tank for sampling. Wastewater collected from the septic tank will be submitted for laboratory analysis using EPA Method 8021. ok

2. The results for the laboratory analysis of sample S-1 are presented in Table 3 of the CAR. The results indicate that purgeable halocarbons were not detected in sample S-1. ok

   is this same location? – 1993 – does not provide location map for S-2

3. HSA Environmental's December 21, 1993 report provides sediment quality results for the S-2 sample location. The results for metals concentrations are listed as follows: arsenic – ND; chromium – 17.94 mg/kg; copper – 5.38 mg/kg; nickel – 6.56 mg/kg; lead – 50.27 mg/kg; and, zinc – 22.31 mg/kg. ok

   > TEL 31.2

   – already explained

4. Please explain the Department's purpose for requesting soil quality sampling in the vicinity of well MW-7. – because MW-7 had [illegible] of contamination

5. Please explain the purpose for requesting soil quality sampling at two feet below ground surface (ft bgs) in the vicinity of sample B-2. The chromium result in the soil sample collected at one ft bgs was below the Residential Soil Target Level.— but above the leachability level of 38 mg/kg ok

1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646 fax (813) 623-3795

The arsenic concentrations in all soil samples collected from a depth of one foot were below the Residential Soil Target Level. A soil sample will be collected for arsenic analysis, as requested; however, it is not apparent why arsenic is a concern for the Department at this site.

6. Following completion of assessment activities, monitor wells will be abandoned according to appropriate standards.

7. An upgradient monitor well will be installed along the west property boundary using construction specifications utilized for previous monitor wells onsite.

8. QORE concurs with the need for a downgradient monitor well, although the proposed well will likely be installed on the adjacent property to the east. An Instrument Transformers building is located along the southern property boundary of Clearwater Top. If needed, QORE will request assistance from the Department to gain access to the eastern property.

9. QORE assumes that Comment 9 relates to Comment 8. ck

10. QORE proposes to use a Geoprobe sampling device and onsite portable gas chromatograph (GC) to assist in the assessment of horizontal and vertical extent of solvent impacts to soil and ground water beneath the site. Both a shallow and deep Geoprobe boring will be installed in the vicinity of well MW-7. The shallow boring will be used to evaluate if a DNAPL is present in the soil matrix above the confining unit identified in boring B-1 at a depth of approximately 15 ft bgs. A deeper Geoprobe boring will also be installed at this location to assess the vertical extent of affected ground water; however, a surface casing will be installed to a depth of 17 ft bgs prior to the installation of this deeper boring to prevent cross contamination from the surficial to deeper aquifer units. Additional shallow Geoprobe borings will be installed to the east of well MW-7 to assist in the selection of permanent shallow monitor well locations.

    Following assessment using the Geoprobe device and GC, permanent monitor wells will be installed to confirm the vertical and horizontal extent. It is anticipated that the permanent vertical extent well will be installed in the vicinity of monitor wells MW-7 and HSAMW-4 because of the elevated concentrations of solvent constituents in ground water samples collected from these wells. The exact location and construction (e.g. depth) of additional monitor wells will be proposed to the Department following the evaluation of the results of the Geoprobe/GC sampling events.

1\. Please clarify this comment. A water table elevation summary table was included in the report (See Table 2). ck

2\. Well elevation surveying will be completed for the CAR Addendum. ok

3\. See response No. 3. ok

4\. See response No. 2. ok

5. QORE's July 13, 2000 letter states that OVA screened would be conducted during piezometer installation and if OVA readings were approximately equal to background concentrations, no soil sample would be submitted for laboratory analysis. As described on Page 7 of the CAR, OVA readings for soil samples collected during piezometer installation were below detection limits; therefore, no soil samples were submitted for laboratory analysis.

6. See response No. 4.

7. See response No. 1.

8. See response No. 1.

9. See response No. 10.

10. The proposed location for the deep boring was blocked during the field activities; therefore, QORE installed a boring in an upgradient location to evaluate the subsurface conditions up to the depth of the first confining unit encountered beneath the site. Additional assessment activities are proposed to assess the horizontal and vertical extent of affected ground water beneath the site (See response No. 10).

11. An offsite drum storage area is located to the southwest of boring B-6 at the Instrument Transformer facility. In addition, a Clearwater Top employee reported that a soil removal was conducted in the vicinity of the drum storage area. It is not known the reason for the soil removal, but QORE collected soil samples from boring B-6 for OVA screening. The sample containing the highest OVA readings was submitted for laboratory analysis using EPA Method 8021 to look for upgradient, offsite impacts. No aromatic or halogen compounds were, however, detected in this soil sample.

12. Arsenic was detected at a concentration of 2.8 mg/kg in a soil sample collected from a depth of 3 to 4 ft bgs in boring B-7. Since the Residential and Industrial Target Levels are for direct expose only (first two feet), the result was compared to the leachability SCTL of 29 mg/kg. The laboratory result for arsenic in this sample is less than the leachability standard.

13. See previous responses.

14. The SCTLs referenced in the report were used for evaluation purposes only. QORE understands these SCTLs are, by rule, the cleanup target levels for petroleum, drycleaning and brownfield program sites only. If agreed, QORE may propose to use these SCTLs for remediation of soil, if necessary, or may propose other risk based corrective action levels for soil at this site.

15. Concrete rubble and other debris were encountered in the first eight feet of well MW-8. This material could not be screened using standard methods for OVA screening of soil.

16. QORE felt it was prudent to evaluate the impact of water levels in the ditch on the direction of ground water flow beneath the site. Based on this evaluation, it is likely

that the bottom of the ditch intersects the water table elevation during, at a minimum, the rainy season.

17. In the CAR addendum, additional ground water elevation data will be contoured and presented as plates.

18. See response No. 12.

19. These errors will be corrected in the CAR addendum.

20. These errors will be corrected in the CAR addendum.

21. These errors will be corrected in the CAR addendum.

22. These errors will be corrected in the CAR addendum.

23. Noted.

24. Noted.

25. See response No. 6.

26. Concur

27. See response No. 8 and 9.

28. See response No. 8 and 9.

* * * *

If you have any questions concerning these responses, please call.

Yours very truly,

QORE, Inc.

11-9-01

Jonathan E. Hull, P.G.
Senior Principal Consultant

Attachment

Cc: Ms. Ruth Fedorsyn, Clearwater Top, Inc.

Department of
Environmental Protection

Jeb Bush
Governor

Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

David B. Struhs
Secretary

February 22, 2000 2001

Ms. Ruth Fedorsyn,
Clearwater Top, Inc.,
P.O. Box 5212,
Clearwater, Florida 34618-5212

Re: Contamination Assessment Report, dated and received December 18, 2000, Accurate Plating/Clearwater Top, Inc. 1937 Calumet Street, Clearwater, Pinellas County, Florida

Dear Ms. Fedorsyn:

The following items will be required for the Florida Department of Environmental Protection (the Department) to consider the contamination assessment at the above reference site complete:

1. The septic tank should be located and it's contents sampled for EPA methods 8010/8020 (halogenated volatile organics/aromatic volatile organics) to assess if this is acting as a continuing source of the ground water contamination. If analysis of the septic tank contents reports concentrations of contaminants, the contents should be proposed for removal and disposed.
2. Sediment from sample location S-1 should be analyzed for volatile halocarbons.
3. Sediment from sample location S-2 should be analyzed for the 8 RCRA metals
4. A soil boring should be installed near monitor well MW-7 since this appears to be the area with the highest concentration of ground water contamination. Soil samples should be screened in discrete intervals from the land surface to the ground water table using an organic vapor analyzer equipped with a flame ionization detector (OVA/FID) to assess the sample with the highest reading and this soil sample with the highest OVA/FID reading should be sent to the laboratory for analysis of 8010/8020 (halogenated volatile organics/aromatic volatile organics) and the 8 RCRA metals.
5. Soil samples should be collected from the area near boring B-2 at the 2 feet below land surface interval and analyzed for chromium to assess if chromium is a contamination issue within the soil profile at this location. A soil sample from the area near B-7 should be collected 1-2 foot below land surface interval to evaluate if arsenic is present as a surface soil contaminant.
6. Monitor wells HSAMW-1, 2, 3 and 6 must be located and properly abandoned according to the Southwest Florida Water Management District (SWFWMD) well abandonment procedures.
7. The consultant should propose the installation of a replacement well for HSAMW-1 as this was the site's upgradient well and an upgradient well does not currently exist.
8. A monitor well should be installed downgradient of HSAMW-4 to evaluate the downgradient edge of the solvent contamination plume. This may entail the installation of the well on a downgradient adjacent property. Please advise the Department if this is the situation and if access is obtainable.
9. A shallow monitor well should be proposed for installation on the eastern portion of the property to complete the horizontal delineation of the surficial aquifer solvent contamination.
10. The installation of a deep monitor well to assess the vertical extent (if any) of the solvent contamination present in the ground water at the site near monitor wells MW-7 and HSAMW-4 since the ground water sampled from these well report the highest levels of ground water contamination.

Ms. Ruth Fedorsyn
Clearwater Top Inc.

The Florida Department of Environmental Protection (the Department) is in receipt of the above referenced correspondence and offers the following specific comments:

1. The depth to the ground water table should be provided during the discussion of the piezometer installation on page 7 of the above referenced report.
2. Monitor well MW-7 must be surveyed to obtain a top of casing elevation for its inclusion in the preparation of ground water flow direction maps.
3. Why wasn't sediment sample S-2 analyzed for the 8 RCRA metals?
4. Why wasn't sediment sample S-1 analyzed for volatile halocarbons?
5. Please explain why OVA/FID readings were not obtained during the installation of monitor well MW-7.
6. A soil boring should be installed near monitor well MW-7 since this appears to be the area with the highest concentration of ground water contamination. Soil samples should be screened in discrete intervals from the land surface to the ground water table using an organic vapor analyzer equipped with a flame ionization detector (OVA/FID) with the highest sample reading sent to the laboratory for analysis of 8010/8020 (halogenated volatile organics/aromatic volatile organics) and the 8 RCRA metals.
7. A concrete slab was encountered during the installation of soil borings B-2 and B-3 as discussed on page 9 in the Discharge Port Sampling section of the report. Figure 2 depicts the location of a concrete septic tank in the area of soil borings B-2 and B-3. Please indicate if concrete encountered is the septic tank .
8. The septic tank should be located and it's contents sampled for EPA methods 8010/8020 (halogenated volatile organics/aromatic volatile organics) to assess if the tank is acting as a continuing source of the ground water contamination. If analysis of the septic tank contents reports concentrations of contaminants detected at this site, the contents should be proposed for removal and disposed.
9. The proposed well to the east of monitor well MW-7 repeatedly could not be installed due to a vehicle and debris blocking the location as discussed on page 9, "Well Installation and Soil Sampling". Was this the deep well that was to be installed east of MW-7 as referenced on page 2 of the July 13, 2000 response to Department's comments on the CAP? This is confusing because a February 21, 2000 conversation with Ms. Christine McKenzie of QORE indicated that the deep well could not be installed because of the thickness of the Hawthorne Group. Please clarify.
10. Why was the proposed deep boring installed at the northwestern portion of the site (B-1) when it was to be installed to the east of monitor well MW-7 as discussed in the July 13, 2000 response to the Department's CAP comments?
11. Why was soil boring B-6 installed? Why wasn't a soil sample collected from B-6 and sent to the laboratory for analysis of EPA methods 8010/8020 (halogenated volatile organics/aromatic volatile organics) and the 8 RCRA metals?
12. It should be noted the concentration of arsenic was detected in the soil sample collected from boring B-7 at 3-4 feet below land surface at 2.8 mg/kg which is above the residential Soil Cleanup Target Level (SCTL) of 0.8 mg/kg. This should have been discussed in the section "Soil Laboratory Results" on page 11 of the above referenced report.
13. Soil samples should be collected from borings B-2 at the 2 feet below land surface interval and analyzed for chromium to assess if chromium is a contamination issue within the soil profile at this location. A soil sample from B-7 should be collected at 1-2 feet below land surface interval to evaluate if arsenic is present as a surface soil contaminant.
14. Please explain what the consultant is referring to when a statement is made the SCTLs are "used for reference only" on page 11 and the statement "the state carcinogen, organoleptic, and systemic toxicants which are used for reference only" on page 12 of the above referenced report.
15. An explanation should be provided on Table 1 "Soil Screening Summary" regarding the missing OVA/FID data from samples intervals 1 foot to 8 feet below land surface for during installation of monitor well MW-8.
16. Explain the purpose of surveying the elevation of the north culvert (which is not depicted on Figure 2, "Site Layout Map" and obtaining depth to water elevations. Does the consultant think this culvert contains ground water and stormwater runoff?

Ms. Ruth Fedorsyn
Clearwater Top Inc.

17. Why weren't the ground water elevations collected on October 30 and November 29, 2000 contoured and presented as figures as was the elevation data collected on November 3, 2000? It appears from a contouring of the elevation data collected on November 29, 2000 that the ground water flow direction is more towards a southeast direction than an easterly direction as depicted on Figure 3, "Ground Water Contour Elevation Map, November 3, 2000".
18. The concentration of arsenic (2.8 mg/kg) detected in the soil sample collected from boring B-7 (3-4 feet) should be highlighted on Table 4 "Metal Concentrations in Soils" as this is elevated above the residential SCTL of 0.8 mg/kg.
19. Methyl-tert-butyl-ether (MTBE) was not analyzed for in the surface water sample (S-2). A value of <10 was reported on Table 5, "Surface Water Analytical Summary" for sample S-2 is incorrect. The surface water east ditch should be labeled as S-2 on Table 5.
20. The following Maximum Contaminant Levels (MCLs) or Florida Ground Water Guidance Concentrations (FGWGCs) were listed incorrectly on Table 6, "Ground Water Monitoring Well Analytical Summary": Chloroform should be 5.7 ug/l, not 6 ug/l, 1,1-dichloroethane should be 70 ug/l not 700 ug/l, and 1,2-dichloropropane should be 5 ug/l not 400 ug/l. The concentrations of bromodichloromethane and chloroform should be highlighted as exceedances as they exceed their respective FGWGC.
21. The concentrations of tetrachloroethene, trichloroethene and vinyl chloride are incorrectly listed for monitor well MW-7 and the concentration of 3.2 dichloroethene should be listed for tetrachloroethene for monitor well HSAMW-4 on Figure 4, Ground Water Contamination Concentration Map Volatile Hydrocarbons".
22. The soil boring and monitor well construction logs provided in Appendix B should note the depth to ground water on each log.
23. It was noted during a review of the water sample logs provided in Appendix D that many of the monitor wells reported pH secondary MCL violations during the purge events.
24. How was a ground water sample collected from HSAMW-4 when it was reported a dry purge occurred on the water sample log in Appendix D? It may be necessary to abandon this monitor well and reinstall another monitor well.
25. Monitor wells HSAMW-1, 2, 3 and 6 must be located and properly abandoned according to the Southwest Florida Water Management District (SWFWMD) well abandonment procedures.
26. The consultant should propose the installation of a replacement well for HSAMW-1 as this was the site's upgradient well and an upgradient well does not exist there currently.
27. A monitor well should be installed downgradient of HSAMW-4 to evaluate the downgradient edge of the solvent contamination plume. This may entail the installation of the well on a downgradient adjacent property. Please advise the Department if this is the situation and if access is obtainable.
28. A shallow monitor well should be proposed for installation on the eastern portion of the property to complete the horizontal delineation of the surficial aquifer solvent contamination.

Please provide a response to the above comments in the form of a Contamination Assessment Report (CAR) addendum within 30 days of receipt of this letter.

If you have questions or concerns regarding the above, please contact me at (813)-744-6100, ext. 474.

Sincerely yours,

Laura J. Herron

Laura J. Herron, CHMM, REM
Environmental Specialist III
Bureau of Waste Cleanup

cc: Mr. John Hull, P.G., QORE Property Sciences, 1211 Tech Boulevard, Suite 200, Tampa, Florida 33619

D.E.P.
NOV 1 5 2000
Southwest District Tampa

QORE
PROPERTY SCIENCES

November 9, 2000

Florida Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

RE: **Monitor Well Locations**
Contamination Assessment (CA)
Clearwater Top, Inc.
1937 Calumet Street
Clearwater, Pinellas County, Florida
QORE Project No. 27-8212

Attention: Ms. Laura J. Herron, CHNM, REM
Environmental Specialist II

Dear Ms. Herron:

On behalf of Clearwater Top, Inc., QORE, Inc. (QORE) is pleased to provide the proposed monitor well locations to the Florida Department of Environmental Protection (FDEP) for the Contamination Assessment at the Clearwater Top property. QORE has completed Tasks 1, 2, and 3, as outlined in the Contamination Assessment Plan (CAP) submitted to the FDEP on June 24, 1999 and the Response to Comments for the CAP submitted to the FDEP on July 13, 2000.

Based on water elevations measured on October 30, 2000 and November 3, 2000, within the three existing wells at the site and the two piezometers installed by QORE on October 30, 2000, ground water flow at the site is generally to the east (Plate 1). The deep soil boring was installed on November 3, 2000, near the northwestern corner of the building, which is upgradient of the area of known impact at MW-7 (Plate 1). The soil lithology at the location of the deep soil boring consists of a brown to gray sand unit with varying amounts of silt and clay, which was present from the ground surface to a depth of 16 feet. A clay unit with some sand was present at a depth of 5 to 6 feet and a clayey sand was present at a depth of 11 to 12 feet. A gray blue very stiff clay unit, which appears to be the upper undifferentiated Hawthorn, was encountered at a depth of 16 feet below ground surface.

A total of three proposed monitor well locations are shown on Plate 1. The locations have been selected based on the ground water flow direction and previously reported laboratory data. Based on the results of the ground water analysis, additional ground water monitor wells may be added at a later date to delineate the zone of impact. The proposed well construction is shown on Plate 2. The monitor wells will be installed to the base of the surficial aquifer, which is estimated at approximately 16 feet, based on the deep soil boring.

The undifferentiated Hawthorne unit, the Arcadia formation and the Tampa member of the Arcadia formation make up the Hawthorn group in the Clearwater area (Florida Geological Survey Publication "The lithostratigraphy of the Hawthorn Group of Florida", 1988). The thickness of the undifferentiated Hawthorn within the area of the site is unknown, however to the

1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646 fax (813) 623-3795

east, closer to Tampa it ranges in thickness from 10 feet to 50 feet. The Arcadia formation, including the Tampa member is up to 100 feet thick in the area, and consists of primarily limestone and dolostone with varying amounts of quartz sand, clay and phosphatic grains.

The deep vertical extent well is not proposed at this time, due to the presence of the Hawthorn unit at a depth of only 16 feet below ground surface.

QORE is planning to install the three shallow monitor wells at the locations shown on Plate 1 on November 15, 2000 and would appreciate any comments related to the well installation locations prior to this date.

If you have questions or comments regarding the information provided above, please contact me at (813) 623-6646.

Yours very truly,

QORE, Inc.

Jonathan E Hull
11-14-00

Jonathan E. Hull, P.G.
Principal Consultant

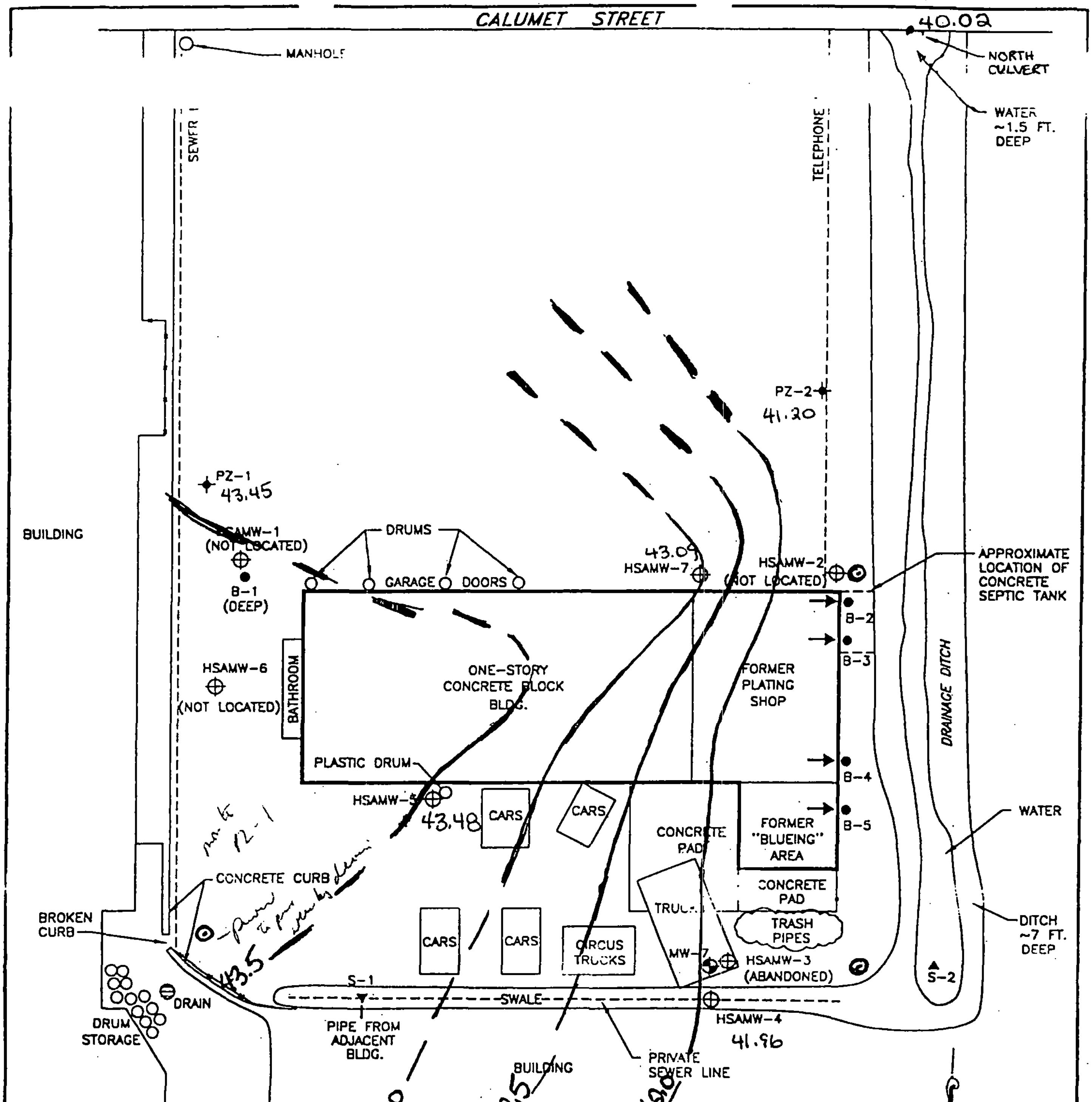
Christine McKenzie

Christine McKenzie
Project Hydrogeologist

Attachments

cc: Ms. Ruth Fedorsyn, Clearwater Top, Inc.

G:ENV\projects\P8212\FDEP draft monitor well locations 11.8.00



LEGEND

⊙ Proposed well locations (shallow)

HSAMW-1 ⊕ MONITOR WELL INSTALLED BY HSA IN 1993 & 1994

MW-7 MONITOR WELL INSTALLED BY QORE IN 1998

→ FORMER DISCHARGE PORTS

B-1 ● SOIL BORING BY QORE, 11/3/00

PZ-1 ✦ TEMPORARY PIEZOMETER INSTALLED BY QORE, 11/1/00

S-2 ▲ SURFACE WATER AND SEDIMENT SAMPLING LOCATION

S-1 ▼ SEDIMENT SAMPLING LOCATION ONLY

43.48 - Groundwater Elevation Nov 3, 2000

SCALE 0 40 FT.

CLEARWATER TOP, INC.	DATE 11/7/00	JOB NO. C8212	PLATE NO. 1

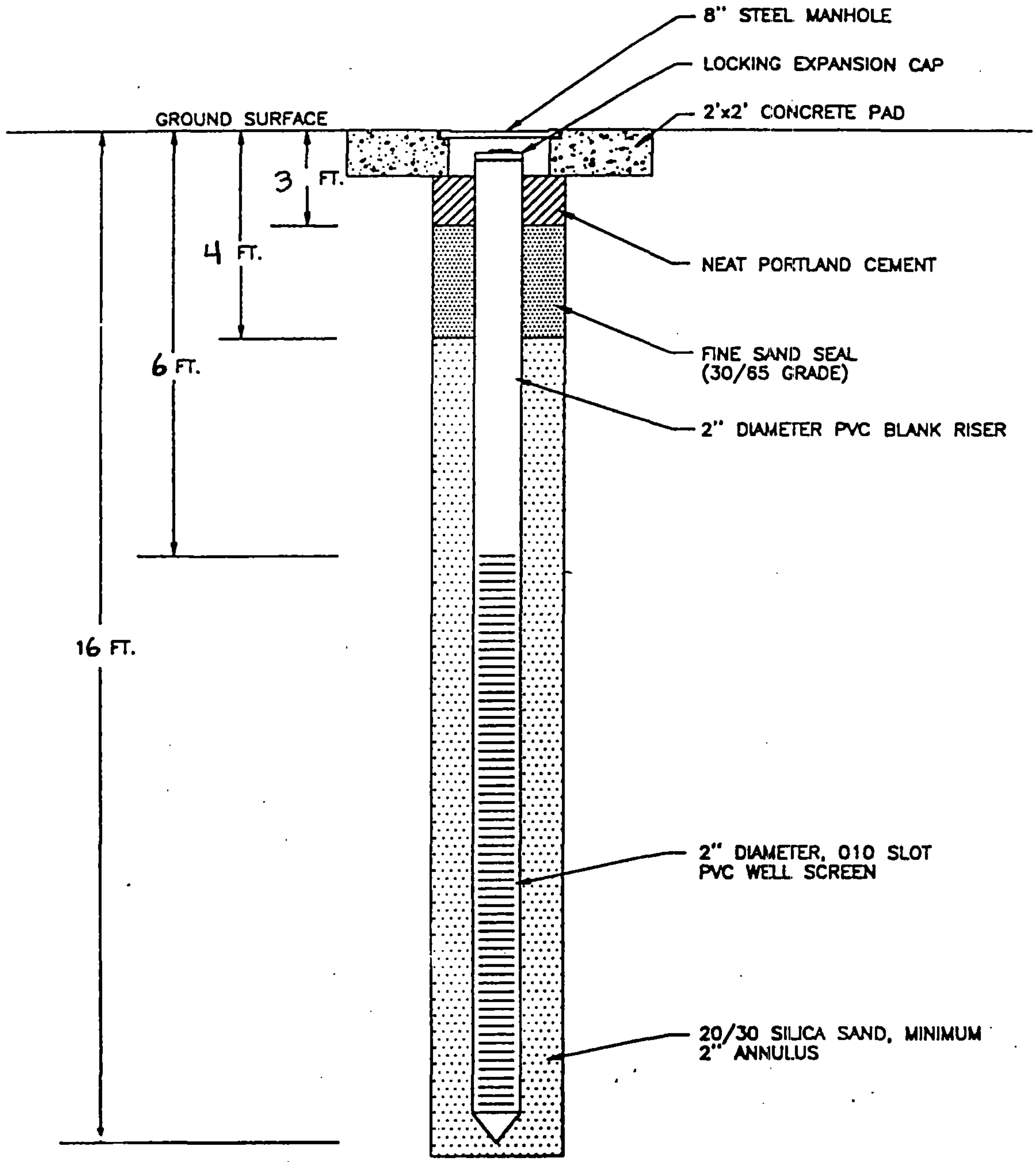
QORE™ PROPERTY SCIENCES

1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646

SITE LAYOUT MAP and Proposed well locations

CLEARWATER, FLORIDA

8212 SITE-LAY



NOTE: NOT TO SCALE

CLEARWATER TOP, INC.	DATE 7/13/00	JOB NO. P8212	PLATE NO. 2
QORE™ PROPERTY SCIENCES 1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646	PROPOSED SHALLOW MONITOR WELL CONSTRUCTION DETAILS CLEARWATER, FLORIDA		

QORE

PROPERTY SCIENCES

July 13, 2000

D.E.P.
JUL 13 2000
Southwest District Tampa

Florida Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida 33619

RE: Response to Comments
Contamination Assessment Plan (CAP)
Clearwater Top, Inc.
1937 Calumet Street
Clearwater, Pinellas County, Florida
QORE Project No. 27-8212

Attention: Ms. Laura J. Herron, CHNM, REM
Environmental Specialist II

Ladies and Gentlemen:

On behalf of Clearwater Top, Inc., QORE, Inc. (QORE) is pleased to present responses to Florida Department of Environmental Protection (FDEP) comments contained in a letter to Ms. Ruth Fedorsyn of Clearwater Top, Inc. FDEP's comments are in regard to a June 25, 1999 Contamination Assessment Plan (CAP) prepared by QORE for the Clearwater Top property in Clearwater, Pinellas County, Florida. FDEP's comments follow in italics, immediately followed by QORE's response.

1. *Can a ground water flow direction be determined using the existing monitoring wells on site instead of installing four new piezometers? If not, please indicate on the site plan the location of the proposed for piezometers.*

QORE proposes to utilize existing monitoring wells, where available, to evaluate the direction of ground water flow beneath the site. It is anticipated that some of the existing monitor wells have been destroyed; therefore, proposed piezometers would be installed to replace destroyed monitor wells where needed to evaluate the direction of ground water flow.

2. *It is stated in the report that head space of the soil samples collected from the soil cuttings generated during piezometers installation will be screened with an OVA/FID. There is no mention of sending the samples with the highest OVA/FID readings (or a percentage of the soil samples collected) to a laboratory for analysis. Laboratory analysis should be performed for EPA Methods 8010/8021 and eight RCRA metals.*

Based on the OVA results obtained during piezometer installation, up to one soil sample will be collected and submitted for laboratory analysis using EPA Methods 8010/8021 and eight RCRA metals per piezometer installed. If all OVA/FID readings in soil samples collected from a piezometer are approximately equal to background concentrations, no soil sample will be submitted for laboratory analysis.

3. *Discrete soil samples should be collected to the ground water table beneath each of the former discharge ports and analyzed for EPA Methods 8010/8021 and eight RCRA metals.*

   As shown on Plate 1 of the CAP, four former wastewater discharge ports have been identified. QORE will collect a discrete soil sample adjacent to each of the four discharge points. Soil samples will be collected from each location at one-foot depth intervals from ground surface to the water table. Each sample will be screened onsite using an OVA/FID. Based on the OVA/FID screening results, one sample from each boring with the highest OVA/FID reading will be collected from each boring and submitted to a laboratory for analysis of purgeable aromatics and purgeable halocarbons utilizing EPA Method 8010/8021 and the eight RCRA metals.

4. *One deep soil boring is proposed for installation. Please show the location of this proposed boring on the site plan. Also, please screen the soil sample head space from the soil samples collected during the continuous split spooning procedure for OVA/FID readings.*

   The proposed location of the deep soil boring is shown on Plate 1. During undisturbed sample collection, QORE will screen soil samples for organic vapors using an OVA/FID.

5. *Why was 40 feet below land surface chosen as the end point for the deep soil boring.*

   The purpose of the soil boring is to characterize the lithologic conditions beneath the site. Site-specific lithologic information is currently unknown; therefore, regional lithologic information from literature was evaluated to characterize the expected conditions beneath the site. Although a depth of 40 feet for a deep soil boring was selected, the exact depth of the soil boring will be determined based on the lithology beneath the site. We will terminate the boring at the base of the surficial acquifer (the top of the first confining unit encountered) up to a maximum depth of 60 feet.

6. *A deep well should be proposed to characterize the vertical extent of ground water contamination. The deep well must be double cased. Please provide a proposed well construction diagram, based on the lithologic information generated by the deep soil boring. A ground water sample should be collected from the deep well and analyzed for EPA Methods 601/602 and the eight RCRA metals.*

   A deep well will be installed to characterize the vertical extent of affected ground water near monitor well MW-7. A well construction diagram for the deep well is shown on Plate 3. A Professional Geologist will select the depth of the screened interval for this well based on the results of OVA/FID screening and lithologic data obtained during installation of the deep boring.

7. *Show how many and the location of the proposed shallow ground water monitoring wells proposed for Task 4. See Comment 2 regarding laboratory analyses of the soil samples collected from the soil cuttings for the proposed ground water monitoring well installation.*

The exact location and number of proposed shallow ground water monitoring wells proposed in Task 4 of the CAP is unknown. The location and number of shallow wells will be determined by a Professional Geologist based on previous ground water quality data and the ground water flow direction characterized during Task 2. At a minimum, one upgradient, one source, and one downgradient well will be installed to characterize the shallow ground water quality conditions beneath the site.

8. *It would be helpful to include previous reports completed by HSA in an appendix as well as the previous results of the ground water analyses performed by QORE.*

The requested reports and ground water quality analysis reports are attached.

9. *The location of HSAMW-3, with a note abandoned, should be located on Figure 1, site layout. The property boundary should be clearly indicated on the site layout.*

A revised site layout map, Plate 1, is attached.

10. *It would be prudent to propose surface water and sediment sampling of the drainage canal to the east of the facility and the drainage ditch to the south of the facility. Samples should be collected upstream and downstream from the facility and analyzed for EPA Methods 601/602, and the eight RCRA metals.*

Sediment and surface water samples were collected and analyzed by HSA as described in the attached letter dated December 21, 1993. The samples were collected from the drainage canal east of the facility and analyzed using EPA Methods 601 and eight RCRA metals. QORE proposes to collect additional samples from the location shown in the HSA report for analysis of purgeable aromatics using EPA Method 602. In addition, soil and surface water samples (if surface water is present), will be collected from the drainage ditch located along the south property boundary. Soil and surface water samples collected from the south ditch will be submitted for analysis using EPA Methods 601/602, and the eight RCRA metals. Plate 1 shows the locations of proposed surface water and sediment sampling locations.

11. *Please provide a list of property owners and/or tenants who have occupied the facility during the last 20 years.*

QORE has asked the property owner, Ms. Ruth Fedorsyn, to provide this information. The information will be incorporated into the Contamination Assessment Report. The information obtained will be used, if necessary, to modify the assessment activities at this site. Changes to the assessment will be discussed with FDEP prior to implementation.

12. *Provide the locations of all storm sewers, inlets and sanitary sewers on and near the property on a site diagram.*

The requested information, including septic systems, if any, will be provided under separate cover.

If you have questions or comments regarding the information provided above, please contact me at (813) 623-6646.

Yours very truly,

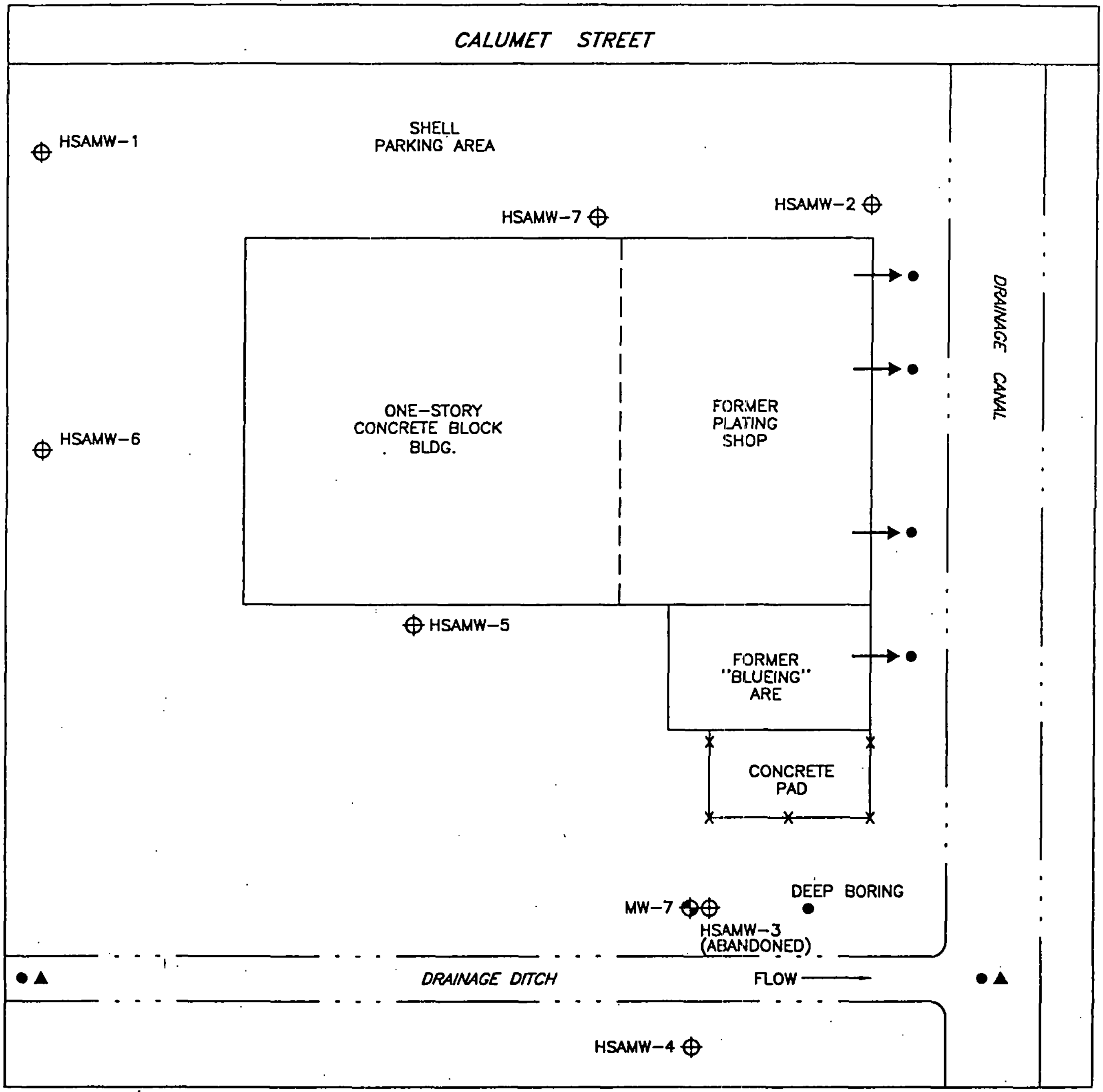
QORE, Inc.

Jonathan E. Hull
7-13-00

Jonathan E. Hull, P.G.
Principal Consultant

Attachments

cc: Ms. Ruth Fedorsyn, Clearwater Top, Inc.



LEGEND

HSAMW-1 ⊕ MONITOR WELL INSTALLED BY HSA IN 1993 & 1994

MW-7 ⊕ MONITOR WELL INSTALLED BY QORE IN 1998

→ FORMER DISCHARGE PORTS

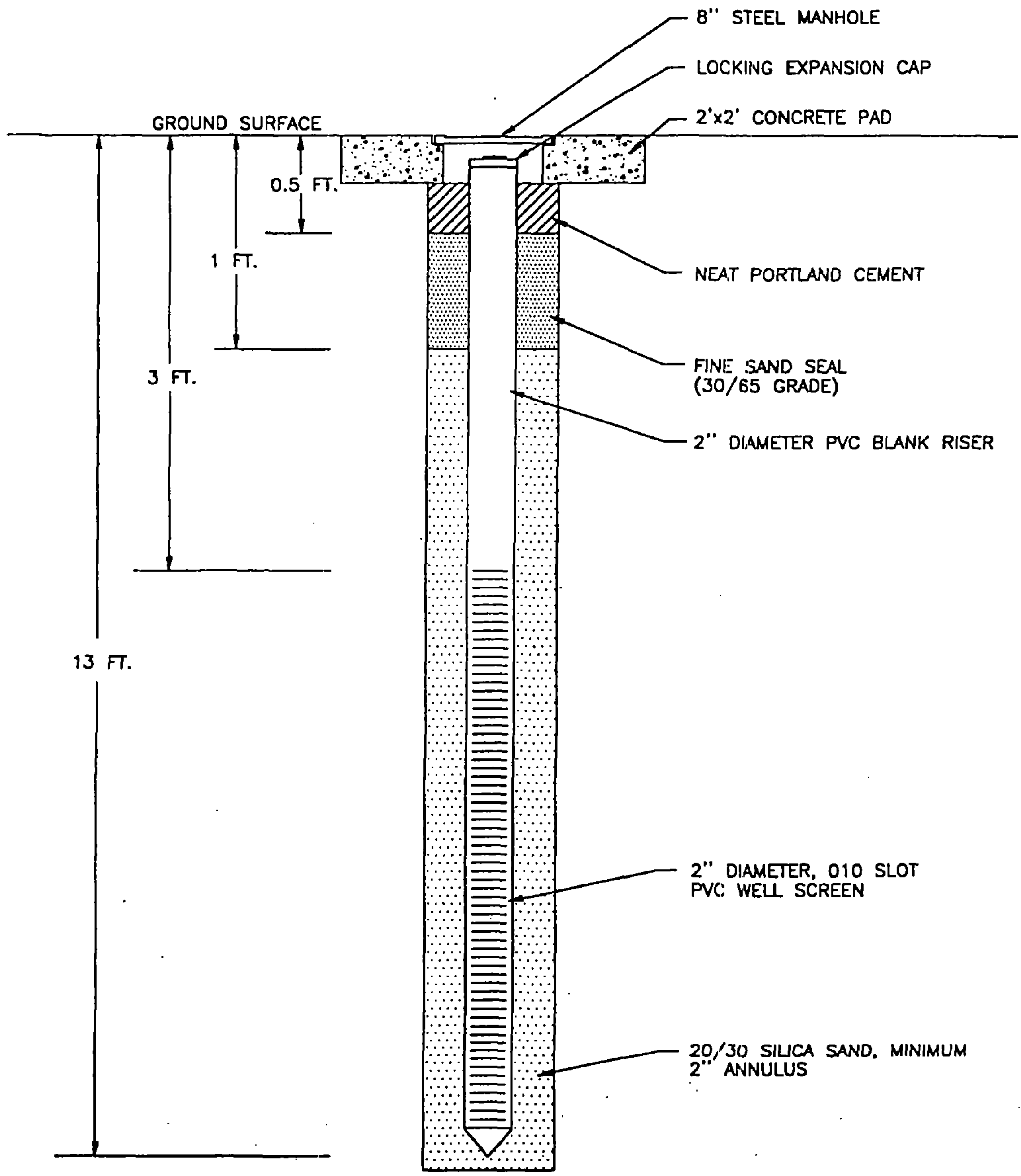
● PROPOSED SOIL/SEDIMENT SAMPLING LOCATION

▲ PROPOSED SURFACE WATER SAMPLING LOCATION

NOT TO SCALE

CLEARWATER TOP, INC.	DATE 7/13/00	JOB NO. C8212	PLATE NO. 1
QORE™ PROPERTY SCIENCES 1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646	SITE LAYOUT UNDEVELOPED PROPERTY CLEARWATER, FLORIDA		

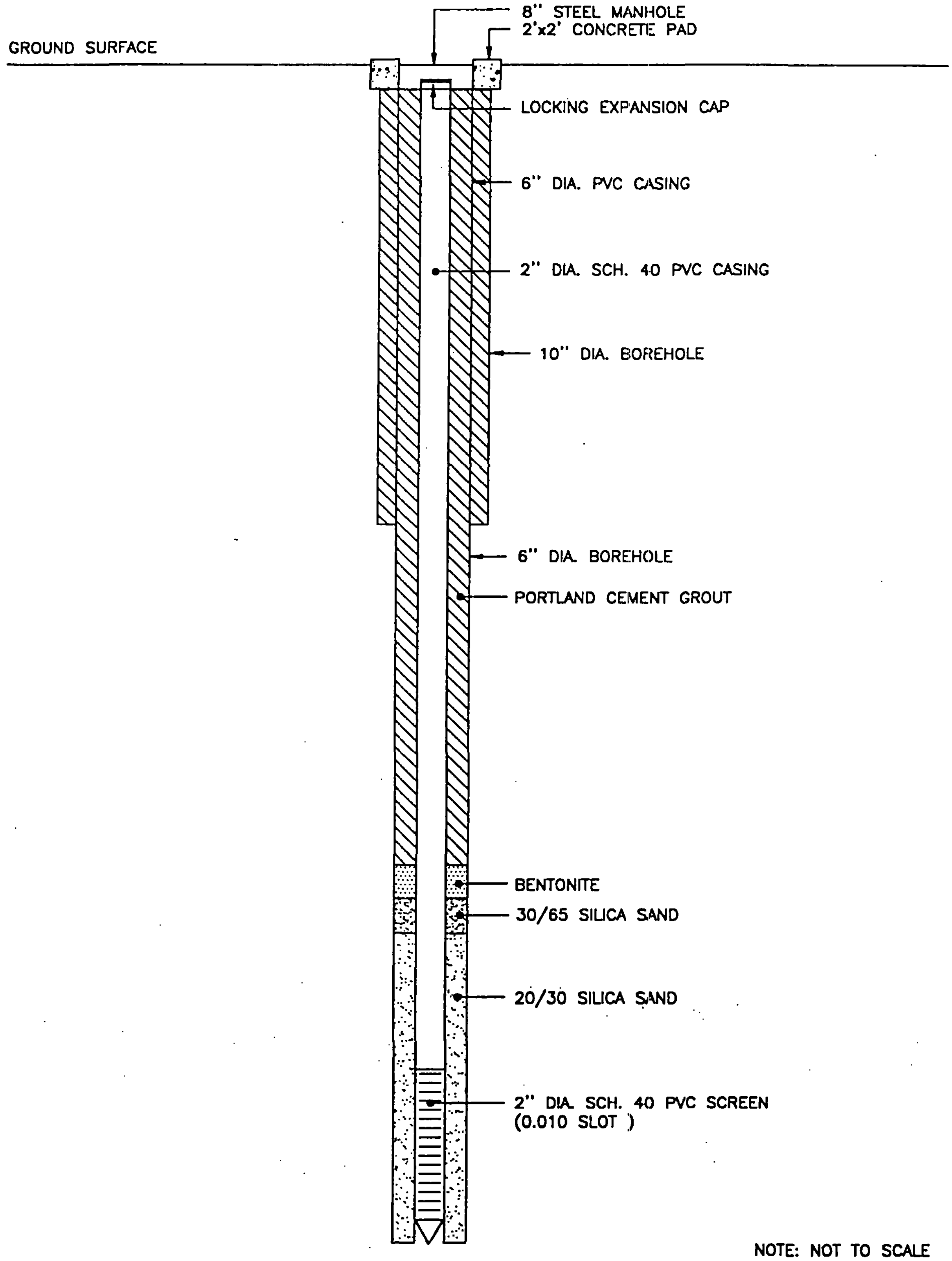
8212\SITE-LAY



NOTE: NOT TO SCALE

CLEARWATER TOP, INC.	DATE 7/13/00	JOB NO. P8212	PLATE NO. 2
QORE™ PROPERTY SCIENCES 1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646	PROPOSED SHALLOW MONITOR WELL CONSTRUCTION DETAILS CLEARWATER, FLORIDA		

8212\WELL-CON



NOTE: NOT TO SCALE

CLEARWATER TOP, INC.	DATE 7/13/00	JOB NO. P8212	PLATE NO. 3

QORE™ PROPERTY SCIENCES

1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646

PROPOSED DEEP MONITOR WELL CONSTRUCTION DETAILS

CLEARWATER, FLORIDA

8212\WELL-CON-deep

9

Initial Remedial Action Report
Harry Haney

April 01, 1996

Prepared for:

Harry Haney
1619 Fox Run
Tarpon Springs, Florida 34689

Prepared by:

SWS Environmental Services
8100 Park Blvd., A-36
Pinellas Park, Florida 34665

EXECUTIVE SUMMARY

RELEASE DISCOVERY

On April 01, 1996, a discharge of approximately 5 gallons of waste oil and diesel fuel occurred along Allen Creek. A call was placed to Southern Waste Services, Inc., by Harry Haney for response and cleanup. The source of the discharge was a five gallon pail of waste fuel and oil dumped onto the ground. The discharge occurred in the creek and along the bank. The petroleum volatilized, permeated into the soil and flowed down the creek.

INITIAL REMEDIAL ACTION

NOTIFICATION

SWS Environmental was contacted by Harry Haney to respond with assistance in the form of an Initial Remedial Action (IRA). Pinellas County Sheriff Department and the Florida Department of Environmental Protection, Bureau of Emergency Response were also on-scene or contacted.

FREE PRODUCT RECOVERY

The remedial actions did not involve any free product recovery.

CONTAMINATED SOIL REMOVAL

Excavation activities were initiated in the street and the areal extent of the contaminated was delineated using OVA screening. Once the areal extent of the contamination was identified, the contaminated soil and brush were removed. Excavated soils, sorbents and debris were placed into drums and transported to a disposal facility. A total of four (4) drums of contaminated soil, sorbents and brush were removed and disposed.

LIMITED CONTAMINATION ASSESSMENT

SOIL QUALITY

Soil Organic Vapor Analyzer (OVA) Flame Ionization Detector (FID) screening was utilized to determine the horizontal and vertical impact of the spilled petroleum. A target level of 10.0 ppm by OVD-FID was established by the Bureau of Emergency Response (BER) as stipulated in the Florida Department of Environmental Protection (FDEP) *"Guidelines for the Assessment and Remediation of Petroleum Contaminated Soil"*.

GROUNDWATER QUALITY

Groundwater was not impacted by this petroleum discharge.

SURFACE WATER QUALITY

Surface water was impacted by this petroleum discharge. The surface impact was limited to a rainbow sheen and dissipated rapidly. Surface water samples were not taken.

WELL SURVEY

No well impacts occurred from this petroleum discharge.

NO FURTHER ACTION REQUEST

Based upon the timely response, cleanup and completion of the IRA removing petroleum impacted soil to an OVD-FID reading of 10.0 ppm or less, a "No Further Action" for this site concerning this discharge is requested at this time.

RECOMMENDATIONS

No further activities required for this site from this discharge.

Florida Department of Environmental Regulation
Twin Towers Office Bldg. • 2600 Blairstone Road • Tallahassee, Florida 32399-2400

Petroleum or Petroleum Product Contamination Report Form

DER Facility ID: N/A

Facility Name: Allen Creek

Facility Address: 1937 Calumet Drive, Clearwater, Florida

County: Pinellas

Other Names for this Site: N/A

Contact Person's Name: Harry Haney

Contact Person's Phone No.: 813-944-2171

Contact Person's Address: 1619 Fox Run, Tarpon Springs, Florida 34689

Date of Discovery: April 01, 1996

Type of Product Discharged: Waste Oil and Diesel

Estimated Amount of Product Lost: 5 Gallons

How did Discharge occur? (Tank leak, Pipe leak, Truck Accident, Explosion, etc.):
Employee dumping.

What has been done to prevent a further Discharge?
Employer cited by Pinellas County Sheriff Department.

To the best of my knowledge, all information on this form is true, accurate, and complete.

[signature] For H. Haney as agent
Signature of Owner, Authorized Representative, Operator

Harry Haney
Print Name of Owner or Operator

Date: 5-20-96

Submit this form to the appropriate district office at the address below
Keep a copy of this form for your records

INITIAL REMEDIAL ACTION NOTIFICATION FORM

This notification provides written confirmation of initial remedial action (IRA) as required by Chapter 62-770.300(5) and (8), Florida Administrative Code. Notification must be within three working days of initiation of an IRA. The notification must be submitted to:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF EMERGENCY RESPONSE
8407 LAUREL FAIR CIRCLE, ROOM 214
TAMPA FL 33610

Upon completion of the IRA, an Initial Remedial Action Report (or its equivalency) should be submitted for technical review.

I. SPILL SITE:

Location / Address: 1937 Calumet Drive, Clearwater FL

DEP facility Number (if applicable): N/A

Date IRA Initiated: April 01, 1996 **Date IRA Completed:** April 01, 1996

II. FREE PRODUCT RECOVERY

A. **Type(s) of Product discharged:** Waste Oil and Diesel

B. **Quantity Lost:** 5 **Recovered:** N/A

C. **Method of Product Recovery:** soil excavation and sorbent material

D. **Type of Discharge During Product Recovery:** N/A

E. **Type of Treatment, ie., Oil/Water sepatator: and Expected Effluent Quality from Any Discharge:**
None

F. **Quantity and Disposal of Recovered Product:** Four (4) drums of soil and debris. Secure Landfill.

II. SOIL EXCAVATION

A. Estimated Volume of Excessively Contaminated Soil Excavated in Cubic Yards:
0.15 Cubic Yards

B. Estimated Dimensions of Excavation Including Depth of Excavation(s):
4 feet X 1.5 feet X 0.5 feet deep

C. Type(s) of Product in Soil: Waste Oil and Diesel

D. Type of Instrument and Method Used to Determine Excessive Soil Contamination:
Flame Ionization Detector
Closed Head Space

IV. Additional Comments:

Curtis L. Middleton Jr.
Print Person Completing Form

5-20-96
Signature, Date

Project Manager
Title, Affiliation

Southern Waste Services, 8100 Park Blvd., A-36, Pinellas Park, FL 34665
Company Mailing Address

(813) 546-6193
Phone Number

PETROLEUM CONTAMINATION
INITIAL REMEDIAL ACTION REPORT FORM

An Initial Remedial Action Report, detailing the initial remedial action (IRA), should be prepared to satisfy the requirements of Chapters 62-770.630 (1) 14; 62-773.500 (2) (a) 4, Florida Administrative Code, (FAC). This form may be used for the IRA report. Additional pages may be necessary in order to properly document the IRA in detail. Failure to provide complete information may result in delays in technical reviews. This report format (or a similar completed report detailing the IRA activities) should be sent to:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF EMERGENCY RESPONSE
8407 LAUREL FAIR CIRCLE, ROOM 214
TAMPA, FL 33610

I. SPILL SITE

Location/Address: 1937 Calumet Drive, Clearwater, FL

DEP Facility ID Number (if applicable): N/A

Date IRA Initiated: April 01, 1996 **Date IRA Completed:** April 01, 1996

II. SPILLER/RESPONSIBLE PARTY

Company Name: Harry Haney

Contact Name: Harry Haney **Telephone:** 813-944-2171

Address: 1619 Fox Run, Tarpon Springs, Florida 34689

III. FREE PRODUCT RECOVERY

A. **Type(s) of Product Discharged:** Waste Oil and Diesel

B. **Quantity**

1. **Estimated Gallons Lost:** 5 Gallons
2. **Gallons Recovered:** N/A **through** No recovery, excavation only **(date)**
3. **Attach Exhibit Indicating Amount of Product Recovered, Dates and Cumulative Totals.**

C. **Attach a Scaled Site Plan, Indicating locations and product thickness in Wells, Boreholes, Excavations, or Utility Conduits and Wells Utilized for Recovery of Free Product.**

D. Method of Product Recovery: soil excavation sorbent use

E. Type of Discharge During Product Recovery: N/A

F. Type of Treatment, i.e., Oil/Water Separator: N/A

G. Attach Written Proof of Proper Disposal of Recovered Product

IV. SOIL EXCAVATION

NOTE: Soil shall be defined as excessively contaminated using the procedure stated in Chapter 62-770.200(2), FAC. Only soil above the ambient water table at the time of excavation can be considered as excessively contaminated soil.

Stockpiled soils greater than thirty (30) days on site waiting for treatment and disposal, must be re-sampled immediately prior to disposal to assure soils are still excessively contaminated.

If soil sampling data indicates that the amount of soil that is excessively contaminated exceeds 1500 cubic yards, an Alternate Procedure Approval Order to excavate must be obtained from the Department.

Unless the established weight per unit volume of 1.4 tons/cubic yard (as referenced in FAC Rule 62-775) is used for the excavated soil, the weight per unit volume must be determined by a field test (in which an accurately measured volume of soil is weighed) at the time of excavation.

A. Actual Volume of Excessively Contaminated Soil Excavated in Cubic Yards: 0.15 Cu. Yd.

B. Dimensions fo Excavation Including Depth of Excavation: 4 feet X 1.5 feet X 0.5 feet

NOTE: Attach written proof from the Department in the form of an Alternate Procedure Approval Order authorizing excavating over 1500 cubic yards if applicable. Authorization must be received prior to the excavation of soils.

C. Type(s) of Product in Soil: Waste Oil and Diesel

D. Depth (ft) to Ground water at the Time of Excavation(s): 8 feet

E. Did Dewatering (i.e., ground water depression) Occur at the Time of Excavation?: no

F. Type of Instrument and Method Used to Determine Excessive Soil Contamination: Flame Ionization Detector

G. Attach a table that compares the OVA-FID readings taken with charcoal filter versus without the filter. Include vertical depths for each sample.

H. Using the OVA procedure for defining excessively contaminated soil as referenced in Rule 62-770.200(2), FAC include a scaled site plan with the information listed below:

1. Location of excavation, and all soil samples. The corresponding OVA-FID readings for each soil sample (with charcoal filter and without) and its depth must be given.

2. Soil Sampling Procedure is as follows:

Start sampling in a location where it is suspected that excessively contaminated soil exists. Sample from the first soil boring outward in a grid pattern, at five (5) to ten (10) foot intervals, until the perimeter of the excessively contaminated soil plume is defined. Vertical sampling should be performed starting approximately at the initial area of contamination of surface and continued at three (3) foot intervals, or fraction thereof, until a depth approximately one (1) foot above the water table is reached.

I. Copies of Laboratory Analysis for Pre-Treatment Soil Samples as Required in Chapter 62-775.410(3), Table II FAC must be Attached.

V. SOIL TREATMENT AND DISPOSAL

A. Method of Treatment of excessively Contaminated Soil: N/A

B. For Off Site Treatment and Disposal at Permitted STTF, Land Farms, or Landfills Attach Documentation From the Treatment Facility Which Confirms the Weight or Volume of Soil Treated and Date Receive. NOTE: See PCR-19 guideline for treatment att out-of-state facilities.

For other Treatment and Disposal Methods (i.e., On-site Land Farming, Bioremediation), Attach Post Treatment Laboratory Analysis for Each 250-300 Cubic Yards of Treated Soil in Accordance With Chapter 62-775.400 and the "Guideline for Assessment and Remediation of Petroleum Contaminated Soils". Most Current Revision. For mobile Thermal Treatment Units, Attach laboratory Analysis per Chapter 62-775(5), FAC.

C. Method of Disposal of Contaminated Soil and Indicate Recipient and Address:
Secure Landfill
Clark Environmental
755 Prairie Ind. Parkway, Mulberry, FL 33860

VI. ADDITIONAL COMMENTS:

Curtis Middleton
Print Person Completing Form

Curtis Middleton 5/20/96
Signature, Date

Project Manager
Title, Affiliation

8100 Park Blvd A-36, Pinellas Park, FL 34665
Company Mailing Address

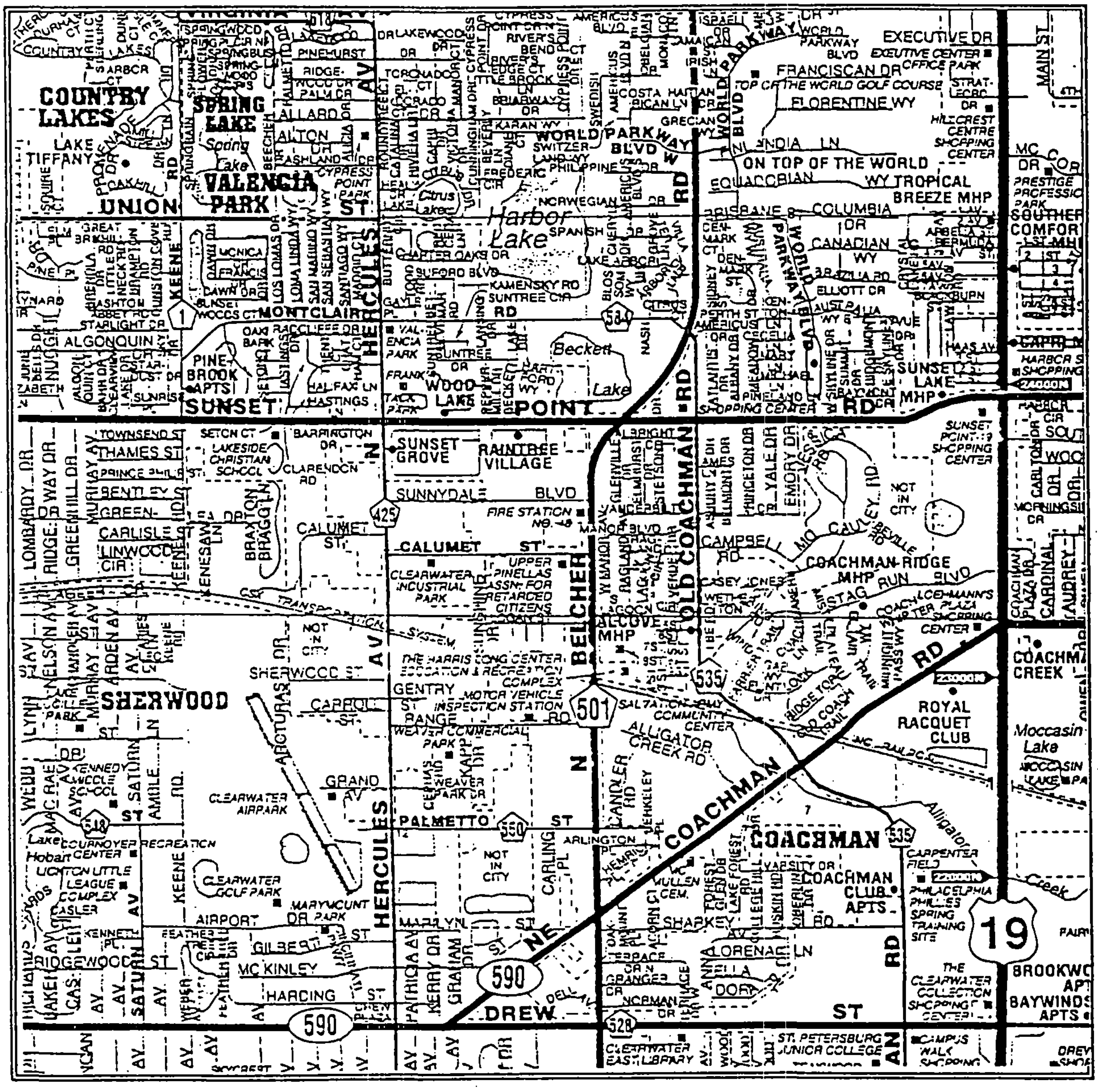
(813) 546-6193
Phone Number

Maps

VINCINITY MAP

Site Name & Location: Harry Haney, 1937 Calumet Dr., Clearwater, FL

Project: Cleanup and disposal of waste oil and diesel from Allen Creek Date: April 01, 1996



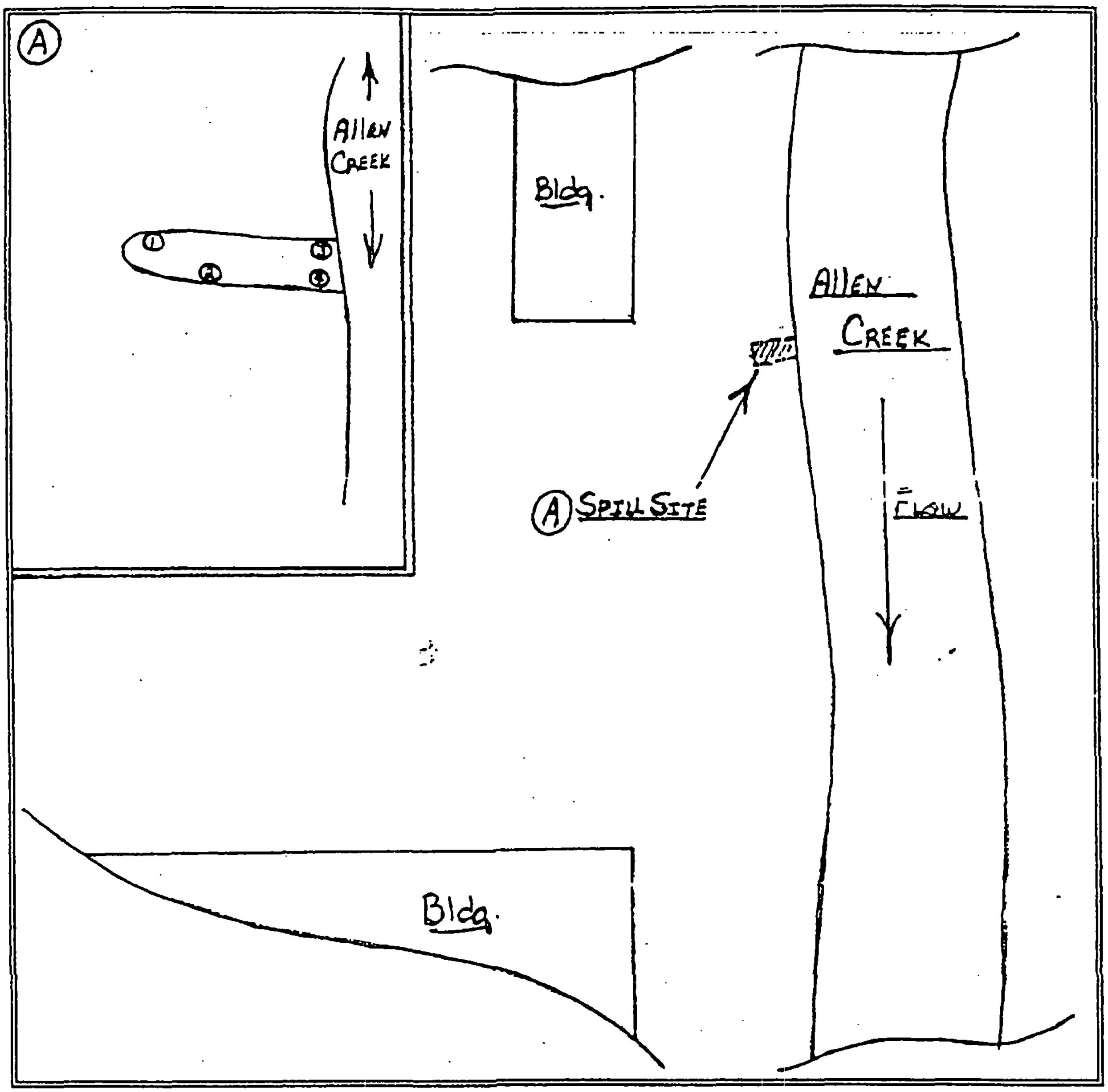
Scale: N/A

N

SITE MAP

Site Name & Location: Harry Haney, 1937 Calumet Dr., Clearwater, FL

Project: Cleanup and disposal of waste oil and diesel from Allen Creek Date: April 01, 1996



Scale: 1" = 25 feet

N

Manifests

NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.	Manifest Document No. 01	2. Page 1 of 1

3. Generator's Name and Mailing Address
Harry Haney 1619 Fox Run
Tarpon Springs FL 34689

4. Generator's Phone (813) 944-2171

5. Transporter 1 Company Name: Southern Waste Services
6. US EPA ID Number: FL 000992244

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Clark Environmental
755 Prairie Ind. Parkway
Mulberry, FL 33860

10. US EPA ID Number: FLD 984206003

A. Transporter's Phone 813-546-6183
B. Transporter's Phone
C. Facility's Phone 941-425-4884

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Petroleum Contaminated Debris & Soil		DM	04	P
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above
3800.001

E. Handling Codes for Wastes Listed Above
Non-Regulated Waste

15. Special Handling Instructions and Additional Information
Emergency # 1-800-852-8878

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name	Signature	Month	Day	Year
Curtis Middleton for / Harry Haney	[signature] as Agent	05	10	96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
J.D. Heath	[signature]	05	10	96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Irene Canning	[signature]	5	10	96

GENERATOR / TRANSPORTER / FACILITY

TRANSPORTER #1

OVA Readings

ORGANIC VAPOR DETECTOR REPORT

Calibration Gas: 100 ppm Methane
Calibration Technician: John Rider

Calibration Date: March 29, 1996

Project Name: Harry Haney

Date: April 01, 1996

Location: 1937 Calumet Drive, Clearwater, FL

BACKGROUND READINGS			
1. N S E W	2. N S E W	3. N S E W	4. N S E W
0 ppm	0 ppm	0 ppm	0 ppm

SAMPLE READINGS (ppm)			
Sample Identification / Depth	No Filter (B)	Charcoal Filter (C)	Corrected Reading (B) - (C)
#1 - 6" Below Grade	0 ppm	0 ppm	0 ppm
#2 - 6" Below Grade	0 ppm	0 ppm	0 ppm
#3 - 6" Below Grade	0 ppm	0 ppm	0 ppm
#4 - 6" Below Grade	0 ppm	0 ppm	0 ppm

C E L E B R A T I N G 3 0 Y E A R S

10

Q O R E

PROPERTY SCIENCES

D.E.P.
JUN 25 1999
Southwest District Tampa

Florida Department of Environmental Protection
Southwest District
3804 Coconut Palm Drive
Tampa, Florida, 33619

June 24, 1999
QORE Project No. P8212

Re: Contamination Assessment Plan (CAP)
Clearwater Top, Inc.
1937 Calumet Street
Clearwater, Pinellas County, Florida

Attention: Ms. Laura J. Herron, ChMM, REM
Environmental Specialist II

Dear Ms. Herron:

On behalf of Clearwater Top, Inc., QORE, Inc. (QORE) is pleased to submit this Contamination Assessment Plan (CAP) to conduct assessment activities at the above referenced site. This proposal has been prepared in response to the Florida Department of Environmental Protection (FDEP) response letter dated May 12, 1999. This CAP was prepared in accordance with the FDEP document entitled "Corrective Actions for Contamination Site Cases". The following sections present the project background, proposed scope of work and project schedule for completion of Contamination Assessment (CA) activities.

PROJECT BACKGROUND

The Clearwater Top, Inc. site (i.e. subject site) is located at 1937 Calumet Street in Clearwater, Pinellas County, Florida. A site layout map is included as Plate 1. The southern portion of the site is occupied by a one-story concrete block building. The northern portion of the site is occupied by an unpaved parking lot. A drainage canal (approximately 15 feet wide and 10 feet deep), identified as Allans Creek, is present along the eastern property boundary of the subject site. A shallow drainage ditch (approximately 4 feet wide and 3 feet deep) is present along a portion of the southern property boundary of the subject site.

The eastern portion of the building was occupied by Accurate Plating and Weaponry, Inc. (former Accurate Plating), a gun refinishing facility from approximately 1977 to 19??. Based on a 1986 FDEP RCRA inspection report for the subject site, the finishing process at the former Accurate Plating facility involved the following steps: 1) dismantling the guns; 2) chemically stripping off the old finish; 3) rinsing the gun parts; and, 4) then either electroplating hardchrome, nickel or gold finish to the gun parts or "Blueing" the gun piece by immersion within phospohoric acid based solutions. During the 1986 FDEP inspection, it was reported that rinsing of the parts including immersion of the parts into overflow rinse water tanks and by hosing the parts by hand and allowing the rinse water to fall to the floor. The rinse water then flowed out onto the ground surface through discharge ports located near the base of the wall on eastern side of the building (refer to Plate 1). The 1986 FDEP inspection reported slight soil discoloration near the base of the northeastern discharge port. The 1986 FDEP inspection also reported that a polypropylene drum of spent chrome solution was previously stored outside on a concrete pad located near the southeast corner of the building. Cracks were noted in the drum and some of the solution had reportedly leaked out of the drum.

A Phase II Environmental Assessment (EA) was prepared by HSA Environmental in December 21, 1993, for the subject site. The Phase II EA reported that elevated concentrations of tetrachloroethylene and trichloroethylene were detected in a ground water sample collected from former monitor well HSAMW-3. For the purposes of this report and all future correspondence the monitor wells installed by HSA, will be identified as "HSAMW-___" and all monitor wells installed by QORE will be identified as "MW-___". Monitor well HSAMW-3 was located near the southwest corner of the subject building. Tetrachloroethylene was detected in a ground water sample collected from monitor well HSAMW-3 at a concentration of 47.57 micrograms per liter (ug/l). Trichloroethylene was detected in a ground water sample collected from monitor well HSAMW-3 at a concentration of 45.65 ug/l. No volatile organic halocarbons were reportedly detected in the ground water samples collected from monitor wells HSAMW-1 and HSAMW-2 installed to the northwest and northeast of the subject facility in 1993 (Plate 1).

According to information on file at the FDEP, four additional monitor wells (HSAMW-4, HSAMW-5, HSAMW-6 and HSAMW-7) were installed by HSA in January 1994. The approximate locations of the monitor wells installed by HSA are presented on Plate 1. The analytical results for the HSA January 1994 sampling event indicate that benzene (0.47 ug/l) was detected in a ground water sample collected from monitor well HSAMW-6. Trans 1,2 dichloroethene (0.73 ug/l) was detected in the ground water sample collected from monitor well HSAMW-7. The detected concentrations of benzene and trans 1,2 dichloroethene in the ground water samples collected from monitor wells HSAMW-6 and HSAMW-7 are below the MCL's of 1 ug/l and 100 ug/l, respectively, for Class G-II ground water. No analyzed compounds were detected in monitor well HSAMW-5 and no analytical results were available in the FDEP file for monitor well HSAMW-4 (located south of the drainage ditch on the southern adjacent property).

Additionally, the Phase II EA conducted by HSA indicates that one surface water and 2 sediment samples were collected from the drainage canal to the east of the subject site. With the exception of the metals chromium, copper, nickel, lead and zinc (below State Cleanup Standards), no other analyzed compounds, including volatile organics, were detected in the collected samples.

Directed by FDEP, in January 1998, QORE attempted to collect a ground water sample from monitor well HSAMW-3 installed by HSA in 1993. QORE identified that the monitor well was plugged above the water table and that an unknown substance had apparently been poured into the well casing above the plug. Due to health and safety considerations, QORE collected a sample of the unknown liquid for laboratory analysis. The results indicate that, other than a high pH, the unknown liquid did not contain detectable concentrations of the contaminants of concern. The liquid was bailed from the monitor well and containerized for proper disposal. QORE then attempted to install a temporary monitor well adjacent to monitor well HSAMW-3 using a hand auger to complete the ground water sampling. Due to subsurface debris, QORE was unable to install the temporary monitor well.

On October 29, 1998, QORE supervised the installation of a permanent shallow monitor well, to evaluate the ground water quality beneath the site in the vicinity of monitor well HSAMW-3. The new monitor well (designated MW-7), was installed approximately six feet east of former monitor well HSAMW-3. The monitor well was installed to a depth of approximately 13 feet below the ground surface. The descriptions of the soils encountered during the installation of the monitor well indicate that the southern portion of the site is generally underlain with a brownish gray fine-grained silty sand from land surface to approximately 13 feet bgs. Monitor well HSAMW-3 was removed and the borehole filled to the surface with grout. On October 30, 1998, QORE collected a ground water sample from well MW-7 for laboratory analysis of volatile organic halocarbons using EPA Method 601. The results of the laboratory analysis of the ground water sample collected from MW-7 indicate the presence of cis-1,2-dichloroethylene (11,000 ug/l), tetrachloroethylene (1,700 ug/l), and trichloroethylene (580 ug/l) at concentrations above their MCLs of 70 ug/l, 3 ug/l, and 3 ug/l, respectively.

October 1998 monitor well installation and ground water sampling activities were summarized in a letter report, "Ground Water Quality Sampling Results", submitted by QORE on February 12, 1999. The laboratory results indicate that the ground water quality in the vicinity of monitor well MW-7 (former monitor well HSAMW-3 installed by HSA) installed to the south of the subject facility has been affected by chlorinated solvent constituents at concentrations above State MCLs for Class G-II water in accordance with 62-550 F.A.C. No existing source of the solvent constituents could be identified; therefore, it is not known whether these constituents originated from past or present tenants onsite, or from offsite activities. Therefore, QORE recommended that additional assessment activities were necessary at the site to identify the source of the solvent constituents in ground water.

As stated above, a letter dated May 12, 1999 was prepared by the FDEP responding to the February 12, 1999 report summarizing the October 1998 monitor well installation and ground water sampling activities for MW-7. Subsequently, on June 9, 1999, a *Draft* Consent Order No. 99-0918 was submitted to Clearwater Top, Inc. by the FDEP, which includes a requirement to submit a CAP to address soil and groundwater resulting from the discharges.

PROPOSED SCOPE OF WORK

The purpose of this CAP is to further evaluate the magnitude, extent and source of the previously identified chlorinated solvent-affected ground water at the subject site. QORE has developed the following proposed scope of work in accordance with the FDEP document entitled "Corrective Actions for Contamination Site Cases", included as Exhibit A of the Consent Order. Implementation of the CAP will include the following tasks:

Task 1 – Construct a Scaled Site Map

A scaled site map will be constructed illustrating the site layout, existing monitor wells and other notable features of the subject site.

Task 2 - Ground Water Flow Direction Evaluation

Up to four piezometers will be installed at the site to evaluate the direction of ground water flow at the subject site. Each piezometer will be installed in hand-augured borings, if possible, to a depth of approximately 6 feet bgs, and constructed of 2-inch diameter Schedule 40 PVC screen and casing. Soil cuttings will be used as backfill. Following installation, the top of casing elevation of the newly installed piezometers and the existing monitor wells at the subject site will be surveyed relative to a benchmark with an assumed datum. Ground water elevations will be measured in each piezometer and monitor well, and the data used to prepare a ground water elevation contour map.

Additionally, soil samples will be collected from the soil cuttings generated during piezometer installation activities will be field screened for the presence of volatile organic vapors using an Organic Vapor Analyzer (OVA) equipped with a Flame Ionization Detector (FID). Specifically, at each sample depth two 16-ounce jars will be half-filled with soil and the top sealed with aluminum foil. The headspace in each jar was then screened using the OVA. The first jar will be screened using the OVA to measure the concentration of total volatile organic vapors, while the second jar will be screened using the OVA equipped with a charcoal filter (to provide a reading of the concentration of methane and ethane). The concentration of methane and ethane will be subtracted from the concentration of total volatile organic vapors.

Task 3 – Lithologic Soil Boring Installation

QORE proposes to install one deep soil boring to further characterize the site lithology. The deep boring will be continuously split-spooned from land surface to approximately 40 feet bgs to provide a detailed description of the site lithology for the purpose of evaluating contaminant migration pathways beneath the site. The soil boring will be installed upgradient of the source area.

Task 4 – Supplemental Monitor Well Installation

The direction of ground water flow is unknown at this time; however, it is likely that the direction of ground water flow is to the east and south toward the drainage canal and ditch, respectively. Based on the evaluated direction of ground water flow at the site, QORE proposes to install additional ground water monitor wells (in addition to the existing monitor wells at the site), if warranted, in the vicinity of monitor well MW-7 to define the extent of the affected ground water in the southeastern portion of the subject site.

Each shallow monitor well will be installed using a hollow stem auger drill rig by a State of Florida licensed drilling contractor. Plate 2 is a proposed monitor well construction diagram. Each well will be constructed of 2-inch diameter, Schedule 40 PVC with a 10-foot screened section slotted at 0.010 inch. The annular space around the PVC pipe will be filled with a 20/30 grade silica sand, followed by a fine sand seal and grout. Each well will be completed with an 8-inch diameter steel, at-grade manhole and a locking water-tight seal. Following installation, each well will be developed by over pumping to remove fine-grained sediments. Soil cuttings and fluids generated during monitor well installation and development will be discharged into a labeled, sealable 55-gallon drum for proper disposal at a later date.

Additionally, soil samples will be collected from the soil cuttings generated during monitor well installation activities will be field screened for the presence of volatile organic vapors using an Organic Vapor Analyzer (OVA) equipped with a Flame Ionization Detector (FID) using the procedures described in Task 2.

Task 5 - Ground Water Sampling

Following a minimum of 24-hours after installation and development of the newly installed monitor wells, QORE will collect ground water samples from the newly installed monitor wells and existing monitor wells for laboratory analysis. Ground water samples will also be collected from the existing monitor wells at the subject site. All ground water sampling activities will be conducted in accordance with QORE's ComQAP No. 990065. The collected ground water samples will be analyzed for halogenated volatile organic compounds using EPA Method 8021 by Savannah Laboratories & Environmental Services, Inc. (SLES), a State Certified laboratory. In accordance with QORE's CompQAP, one equipment blank sample will be collected and analyzed for the same parameters. A trip blank will also accompany the empty containers and samples during transportation and analyzed for halogenated volatile organic compounds. Field parameters that will be measured include pH, conductivity and temperature.

Task 6 - Potable Well Inventory

QORE will review available records to identify potable wells within a ½-mile radius of the site, including irrigation, domestic wells, and public water supply wells. Southwest Florida Water Management District (SWFWMD) permit records, City of Clearwater and Pinellas County Public Health Unit will be checked.

Task 7 - CAR Preparation

Following the completion of assessment activities described above, QORE will prepare a Contamination Assessment Report (CAR) which will summarize the results of the assessment activities, and will recommend additional assessment activities, if appropriate. The CAR will include the following:

- Details concerning the site history;
- Soil and ground water investigation methods;
- Soil and ground water quality results;
- Discussion of the hydrogeology of the site;
- The location of public and private water supply wells within a ½-mile radius of the site; and,
- Recommendation for further work, if necessary.

PROJECT SCHEDULE

A schedule for completing the proposed scope of work described above has been developed. QORE estimates that the field activities, which accompany Tasks 1, 2, 3, 4, 5, 6 and 7, will be completed within 30 days upon CAP approval. The soil and ground water laboratory results will be received approximately 10 working days following sample collection. QORE estimates that the CAR will be submitted to the FDEP for review within 60 days of authorization to proceed.

* * * *

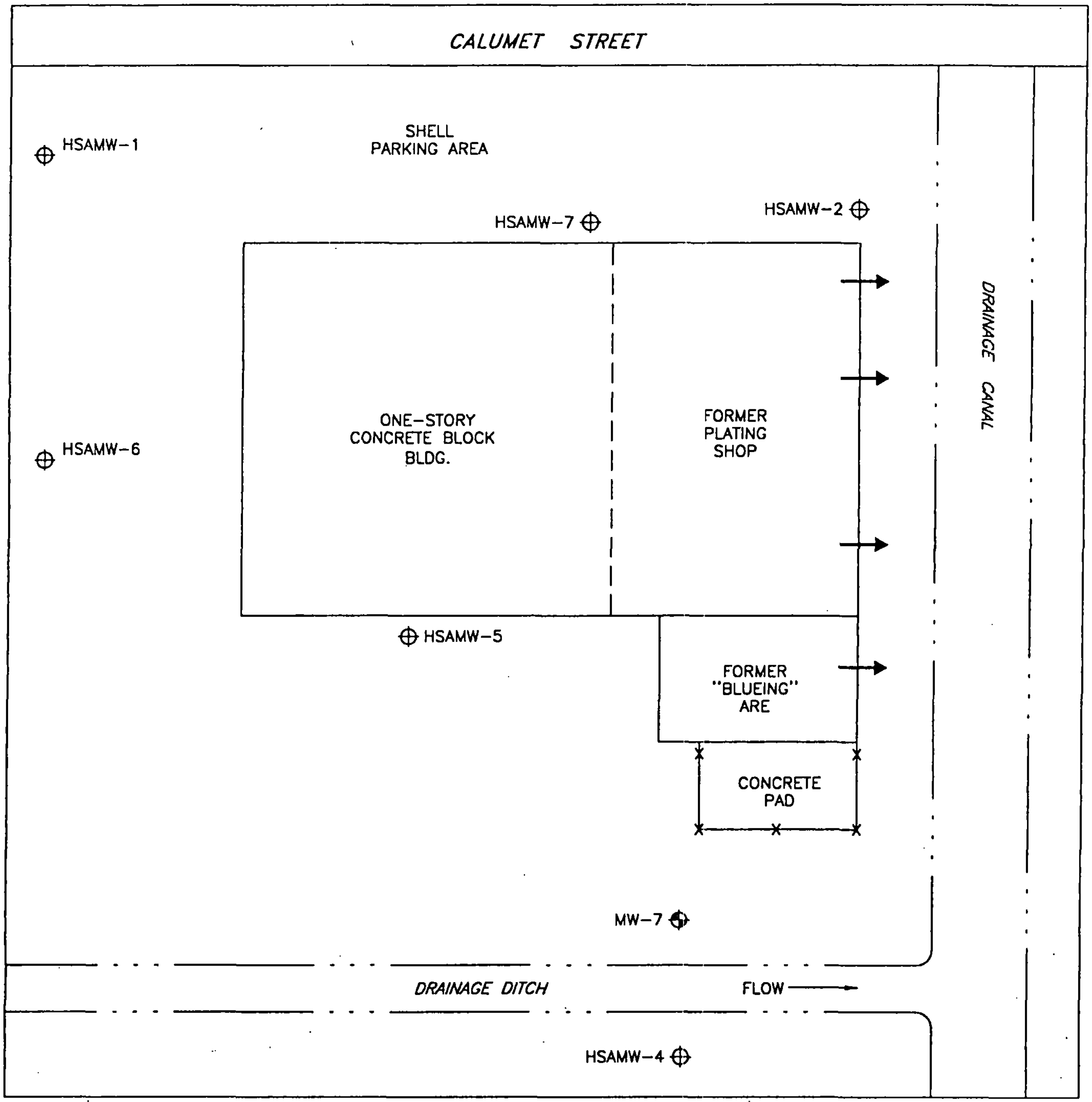
If you have any questions, please call (813) 623-6646

Sincerely,
QORE, INC.

Lance J. Dockter
Associate Hydrogeologist

6-24-99
Jon Hull, P.G.
Principal Consultant

cc: Ms. Ruth Fedorsyn, Clearwater Top, Inc.



LEGEND

HSAMW-1 ⊕ MONITOR WELL INSTALLED BY HSA IN 1993 & 1994

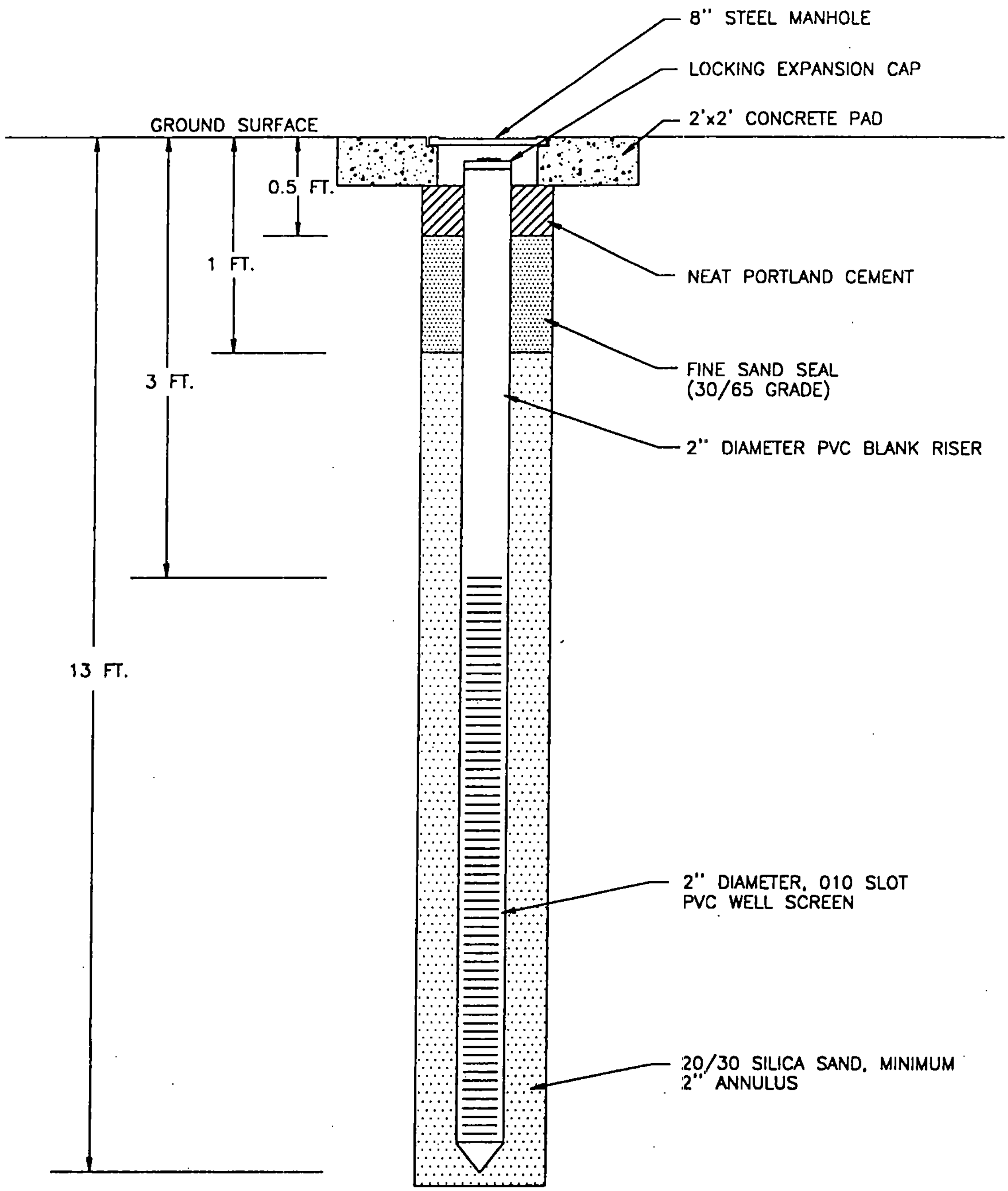
MW-7 ⊕ MONITOR WELL INSTALLED BY QORE IN 1998

⟶ FORMER DISCHARGE PORTS

NORTH

NOT TO SCALE

FORMER ACCURATE PLATING/CLEARWATER TOP, INC.	DATE 6/24/99	JOB NO. C8212	PLATE NO. 1
QORE™ PROPERTY SCIENCES 1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646	SITE LAYOUT UNDEVELOPED PROPERTY CLEARWATER, FLORIDA		



NOTE: NOT TO SCALE

CLEARWATER TOP, INC.	DATE 6/24/99	JOB NO. P8212	PLATE NO. 2

QORE™ PROPERTY SCIENCES

1211 Tech Blvd. Suite 200 Tampa, Florida 33619 (813) 623-6646

PROPOSED MONITOR WELL
CONSTRUCTION DETAILS

CLEARWATER, FLORIDA

8212\WELL-CON

Table II

Soil Cleanup Target Levels

Contaminant	CAS#	Direct Exposure Residential (mg/kg)	Direct Exposure Commercial/ Industrial (mg/kg)	Leachability Based on Groundwater Criteria (mg/kg)	Leachability Based on Freshwater Surface Water Criteria (mg/kg)	Leachability Based on Marine Surface Water Criteria (mg/kg)	Leachability Based on Groundwater of Low Yield/ Poor Quality (mg/kg)	Target Organ/System or Effect
Chloromethane	74-87-3	1.7	2.3	0.01	2.3	2.3	0.1	-Carcinogen
Chloronaphthalene, beta-	91-58-7	4000	49000	260	NA	NA	2600	-Liver -Respiratory
Chloronitrobenzene, p-	100-00-5	28	55	3.7	1.6	1.6	37	-Carcinogen
Chlorophenol, 2-	95-57-8	82	640	0.7	2.5	2.5	7	-Reproductive
Chlorophenol, 3-	108-43-0	280	3400	0.2	3.1	3.1	2	-None Specified
Chlorophenol, 4-	106-48-9	220	2400	0.04	1.2	1.2	0.4	-None Specified
Chlorothalonil [or Bravo]	1897-45-6	88	280	0.2	0.06	0.06	2	-Carcinogen -Kidney
Chlorotoluene, o-	95-49-8	120	850	2.8	7.7	7.7	28	-Body Weight
Chlorotoluene, p-	106-43-4	100	730	2.5	NA	NA	25	-None Specified
Chlorpropham	101-21-3	13000	200000	51	7	7	510	-Bone Marrow -Kidney -Liver -Spleen
Chlorpyrifos	2921-88-2	220	4200	15	0.001	0.001	150	-Neurological
Chromium (hexavalent) (b)	18540-29-9	210	420	38	***	***	380	-Carcinogen -Respiratory
Chrysene	218-01-9	140	450	77	0.7	0.7	770	-Carcinogen
Cobalt	7440-48-4	4700	110000	***	NA	NA	***	-Cardiovascular -Immunological -Neurological -Reproductive
Copper	7440-50-8	110**	76000	***	***	***	***	-Gastrointestinal
Coumaphos	56-72-4	18	300	0.3	0.0007	0.0007	3	-Neurological
Crotonaldehyde	123-73-9	0.07	0.1	17	NA	NA	170	-Carcinogen
Cumene [or Isopropyl benzene]	98-82-8	160	1100	0.2	56	56	2	-Adrenals -Kidney
Cyanide (potassium salt) (b)	57-12-5	30**	39000	40	***	***	400	-Body Weight -Neurological -Thyroid

Table II
Soil Cleanup Target Levels

Contaminant	CAS#	Direct Exposure Residential (mg/kg)	Direct Exposure Commercial/ Industrial (mg/kg)	Leachability Based on Groundwater Criteria (mg/kg)	Leachability Based on Freshwater Surface Water Criteria (mg/kg)	Leachability Based on Marine Surface Water Criteria (mg/kg)	Leachability Based on Groundwater of Low Yield/ Poor Quality (mg/kg)	Target Organ/System or Effect
Hexachlorocyclopentadiene	77-47-4	2.4	16	400	24	24	4000	-Gastrointestinal
Hexachloroethane	67-72-1	34	78	0.2	0.08	0.08	2	-Carcinogen -Kidney
Hexahydro-1,3,5-trinitro-1,3,5-triazine [or RDX]	121-82-4	6.7	16	0.007	1.3	1.3	0.07	-Carcinogen -Reproductive
Hexane, n-	110-54-3	500	3600	3.5	1200	1200	35	-Neurological
Hexanone, 2- [or Methyl butyl ketone]	591-78-6	5.1	34	1.4	NA	NA	14	-None Specified
Hexazinone	51235-04-2	1600	18000	1.1	5	5	11	-Body Weight
Hydroquinone	123-31-9	1800	19000	1.4	0.02	0.02	14	-Blood
Indeno(1,2,3-cd)pyrene	193-39-5	1.5	5.3	28	4.3	4.3	280	-Carcinogen
Iron	7439-89-6	23000	480000	***	***	***	***	-Blood -Gastrointestinal
Isobutyl alcohol	78-83-1	4100	31000	8.9	200	200	89	-Neurological
Isophorone	78-59-1	340	580	0.2	3.8	3.8	2	-Carcinogen
Lead (d)	7439-92-1	400	920	***	***	***	***	-Neurological
Linuron	330-55-2	130	2000	0.04	1.4	1.4	0.4	-Blood
Lithium	7439-93-32	1600	40000	***	NA	NA	***	-None Specified
Malathion	121-75-5	1300	20000	4.2	0.003	0.003	42	-Neurological
Maneb	12427-38-2	350	5500	6.3	0.5	0.5	63	-Thyroid
Manganese	7439-96-5	1600	22000	***	NA	NA	***	-Neurological
Mercury	7439-97-6	3.4	26	2.1	0.01	0.01	21	-Neurological
Mercury, methyl	22967-92-6	0.8	5.4	0.002	NA	NA	0.02	-Neurological

Table II
Soil Cleanup Target Levels

Contaminant	CAS#	Direct Exposure Residential (mg/kg)	Direct Exposure Commercial/Industrial (mg/kg)	Leachability Based on Groundwater Criteria (mg/kg)	Leachability Based on Freshwater Surface Water Criteria (mg/kg)	Leachability Based on Marine Surface Water Criteria (mg/kg)	Leachability Based on Groundwater of Low Yield/ Poor Quality (mg/kg)	Target Organ/System or Effect
Trimethylbenzene, 1,2,3-	526-73-8	13	89	0.3	NA	NA	3	-None Specified
Trimethylbenzene, 1,2,4-	95-63-6	13	88	0.3	7.2	7.2	3	-None Specified
Trimethylbenzene, 1,3,5-	108-67-8	11	74	0.3	6.7	6.7	3	-None Specified
Trinitrobenzene, 1,3,5-	99-35-4	1300	14000	1	0.09	0.09	10	-Blood -Spleen
Trinitrotoluene, 2,4,6-	118-96-7	24	55	0.06	0.3	0.3	0.6	-Carcinogen -Liver
TRPH	NOCAS#	340	2500	340	340	340	3400	-Multiple Endpoints Mixed Contaminants
Uranium, natural	7440-61-1	120	470	***	NA	NA	***	-None Specified
Vanadium (b)	7440-62-2	15**	7400	980	NA	NA	9800	-None Specified
Vernam	1929-77-7	29	260	0.1	0.2	0.2	1	-Body Weight
Vinyl acetate	108-05-4	230	1600	0.4	3	3	4	-Body Weight -Kidney -Nasal
Vinyl chloride	75-01-4	0.03	0.04	0.007	NA	NA	0.07	-Carcinogen
Xylenes, total	1330-20-7	5900	40000	0.2	3.9	3.9	2	-Body Weight -Mortality -Neurological
Zinc (b)	7440-66-6	23000	560000	6000	***	***	60000	-Blood
Zinc phosphide	1314-84-7	23	550	***	NA	NA	***	-Body Weight
Zineb	12122-67-7	3400	53000	19	0.7	0.7	190	-Thyroid

12

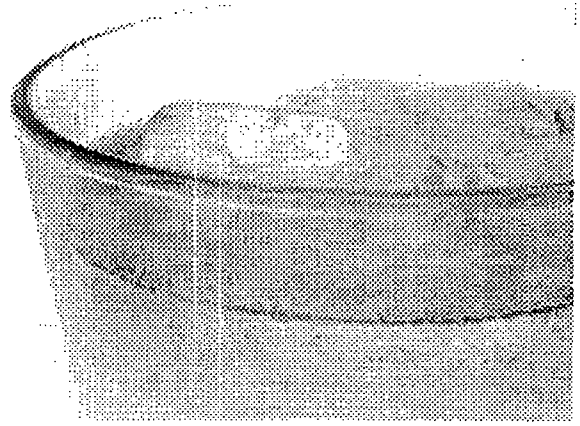
U.S. Environmental Protection Agency

Ground Water & Drinking Water

List of Drinking Water Contaminants & MCLs

National Primary Drinking Water Regulations

National Primary Drinking Water Regulations (NPDWRs or primary standards) are legally enforceable standards that apply to public water systems. Primary standards protect public health by limiting the levels of contaminants in drinking water. Vist the list of regulated contaminants with links for more details.



- **List of Contaminants & their Maximum Contaminant Level (MCLs)**
- Setting Standards for Safe Drinking Water to learn about EPA's standard-setting process
- EPA's Regulated Contaminant Timeline (PDF File)
- National Primary Drinking Water Regulations EXIT disclaimer - The complete regulations regarding these contaminants availible from the Code of Federal Regulations Website

National Secondary Drinking Water Regulations

National Secondary Drinking Water Regulations (NSDWRs or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards.

- **List of National Secondary Drinking Water Regulations**
- National Secondary Drinking Water Regulations EXIT disclaimer - The complete regulations regarding these contaminants availible from the Code of Federal Regulations Website.

Unregulated Contaminants

This list of contaminants which, at the time of publication, are not subject to any proposed or promulgated national primary drinking water regulation (NPDWR), are known or anticipated to occur in public water systems, and may require regulations under SDWA. For more information check out the list, or vist the Drinking Water Contaminant Candidate List (CCL) website.

- **List of Unregulated Contaminants**
- Drinking Water Contaminant Candidate List (CCL) Website
- Unregulated Contaminant Monitoring Rule (UCMR)

List of Contaminants & their MCLs

EPA 816-F-02-013
July 2002
PDF version

Microorganisms | Disinfectants | Disinfection Byproducts | Inorganic Chemicals | Organic Chemicals | Radionuclides

- The links provided below are to either Consumer Fact Sheet, Rule Implementation websites, or PDF files

Microorganisms

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Cryptosporidium	zero	TT [3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and fecal animal waste
Giardia lamblia	zero	TT[3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste
Heterotrophic plate count	n/a	TT[3]	HPC has no health effects; it is an analytic method used to measure the variety of bacteria that are common in water. The lower the concentration of bacteria in drinking water, the better maintained the water system is.	HPC measures a range of bacteria that are naturally present in the environment
Legionella	zero	TT[3]	Legionnaire's Disease, a type of pneumonia	Found naturally in water; multiplies in heating systems
Total Coliforms (including fecal coliform and *E. Coli*)	zero	5.0%[4]	Not a health threat in itself; it is used to indicate whether other potentially harmful bacteria may be present[5]	Coliforms are naturally present in the environment; as well as feces; fecal coliforms and *E. coli* only come from human and animal fecal waste.
Turbidity	n/a	TT[3]	Turbidity is a measure of the cloudiness of water. It is used to indicate water quality	Soil runoff

			used to indicate water quality and filtration effectiveness (e.g., whether disease-causing organisms are present). Higher turbidity levels are often associated with higher levels of disease-causing microorganisms such as viruses, parasites and some bacteria. These organisms can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.	
Viruses (enteric)	zero	TT[3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste

Disinfection Byproducts

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Bromate	zero	0.010	Increased risk of cancer	Byproduct of drinking water disinfection
Chlorite	0.8	1.0	Anemia; infants & young children: nervous system effects	Byproduct of drinking water disinfection
Haloacetic acids (HAA5)	n/a[6]	0.060	Increased risk of cancer	Byproduct of drinking water disinfection
Total Trihalomethanes (TTHMs)	none[7] ---------- n/a[6]	0.10 ---------- 0.080	Liver, kidney or central nervous system problems; increased risk of cancer	Byproduct of drinking water disinfection

Disinfectants

Contaminant	MRDLG[1] (mg/L)[2]	MRDL[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Chloramines (as Cl_2)	MRDLG=4[1]	MRDL=4.0[1]	Eye/nose irritation; stomach discomfort, anemia	Water additive used to control microbes
Chlorine (as Cl_2)	MRDLG=4[1]	MRDL=4.0[1]	Eye/nose irritation; stomach discomfort	Water additive used to control microbes
Chlorine dioxide (as ClO_2)	MRDLG=0.8[1]	MRDL=0.8[1]	Anemia; infants & young children: nervous system effects	Water additive used to control microbes

Inorganic Chemicals

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Antimony	0.006	0.006	Increase in blood cholesterol; decrease in blood sugar	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic	0[7]	0.010 as of 01/23/06	Skin damage or problems with circulatory systems, and may have increased risk of getting cancer	Erosion of natural deposits; runoff from orchards, runoff from glass & electronicsproduction wastes
Asbestos (fiber >10 micrometers)	7 million fibers per liter	7 MFL	Increased risk of developing benign intestinal polyps	Decay of asbestos cement in water mains; erosion of natural deposits
Barium	2	2	Increase in blood pressure	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Beryllium	0.004	0.004	Intestinal lesions	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Cadmium	0.005	0.005	Kidney damage	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chromium (total)	0.1	0.1	Allergic dermatitis	Discharge from steel and pulp mills; erosion of natural deposits
Copper	1.3	TT[8]; Action Level=1.3	Short term exposure: Gastrointestinal distress Long term exposure: Liver or kidney damage People with Wilson's Disease should consult their personal doctor if the amount of copper in their water exceeds the action level	Corrosion of household plumbing systems; erosion of natural deposits
Cyanide (as free cyanide)	0.2	0.2	Nerve damage or thyroid problems	Discharge from steel/metal factories; discharge from plastic and fertilizer factories

Fluoride	4.0	4.0	Bone disease (pain and tenderness of the bones); Children may get mottled teeth	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Lead	zero	TT[8]; Action Level=0.015	Infants and children: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities Adults: Kidney problems; high blood pressure	Corrosion of household plumbing systems; erosion of natural deposits
Mercury (inorganic)	0.002	0.002	Kidney damage	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands
Nitrate (measured as Nitrogen)	10	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (measured as Nitrogen)	1	1	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Selenium	0.05	0.05	Hair or fingernail loss; numbness in fingers or toes; circulatory problems	Discharge from petroleum refineries; erosion of natural deposits; discharge from mines
Thallium	0.0005	0.002	Hair loss; changes in blood; kidney, intestine, or liver problems	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories

Organic Chemicals

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Acrylamide	zero	TT[9]	Nervous system or blood problems; increased risk of cancer	Added to water during sewage/wastewater treatment
Alachlor	zero	0.002	Eye, liver, kidney or spleen problems; anemia; increased risk of cancer	Runoff from herbicide used on row crops
Atrazine	0.003	0.003	Cardiovascular system or reproductive problems	Runoff from herbicide used on row crops
Benzene	zero	0.005	Anemia; decrease in blood platelets; increased risk of cancer	Discharge from factories; leaching from gas storage tanks and landfills
Benzo(a)pyrene (PAHs)	zero	0.0002	Reproductive difficulties; increased risk of cancer	Leaching from linings of water storage tanks and distribution lines
Carbofuran	0.04	0.04	Problems with blood, nervous system, or reproductive system	Leaching of soil fumigant used on rice and alfalfa
Carbon tetrachloride	zero	0.005	Liver problems; increased risk of cancer	Discharge from chemical plants and other industrial activities
Chlordane	zero	0.002	Liver or nervous system problems; increased risk of cancer	Residue of banned termiticide
Chlorobenzene	0.1	0.1	Liver or kidney problems	Discharge from chemical and agricultural chemical factories
2,4-D	0.07	0.07	Kidney, liver, or adrenal gland problems	Runoff from herbicide used on row crops
Dalapon	0.2	0.2	Minor kidney changes	Runoff from herbicide used on

				rights of way
1,2-Dibromo-3-chloropropane (DBCP)	zero	0.0002	Reproductive difficulties; increased risk of cancer	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
o-Dichlorobenzene	0.6	0.6	Liver, kidney, or circulatory system problems	Discharge from industrial chemical factories
p-Dichlorobenzene	0.075	0.075	Anemia; liver, kidney or spleen damage; changes in blood	Discharge from industrial chemical factories
1,2-Dichloroethane	zero	0.005	Increased risk of cancer	Discharge from industrial chemical factories
1,1-Dichloroethylene	0.007	0.007	Liver problems	Discharge from industrial chemical factories
cis-1,2-Dichloroethylene	0.07	0.07	Liver problems	Discharge from industrial chemical factories
trans-1,2-Dichloroethylene	0.1	0.1	Liver problems	Discharge from industrial chemical factories
Dichloromethane	zero	0.005	Liver problems; increased risk of cancer	Discharge from drug and chemical factories
1,2-Dichloropropane	zero	0.005	Increased risk of cancer	Discharge from industrial chemical factories
Di(2-ethylhexyl) adipate	0.4	0.4	Weight loss, liver problems, or possible reproductive difficulties.	Discharge from chemical factories
Di(2-ethylhexyl) phthalate	zero	0.006	Reproductive difficulties; liver problems; increased risk of cancer	Discharge from rubber and chemical factories
Dinoseb	0.007	0.007	Reproductive difficulties	Runoff from herbicide used on soybeans and vegetables
Dioxin (2,3,7,8-TCDD)	zero	0.00000003	Reproductive difficulties; increased risk of cancer	Emissions from waste incineration and other combustion; discharge from chemical factories

Diquat	0.02	0.02	Cataracts	Runoff from herbicide use
Endothall	0.1	0.1	Stomach and intestinal problems	Runoff from herbicide use
Endrin	0.002	0.002	Liver problems	Residue of banned insecticide
Epichlorohydrin	zero	TT[9]	Increased cancer risk, and over a long period of time, stomach problems	Discharge from industrial chemical factories; an impurity of some water treatment chemicals
Ethylbenzene	0.7	0.7	Liver or kidneys problems	Discharge from petroleum refineries
Ethylene dibromide	zero	0.00005	Problems with liver, stomach, reproductive system, or kidneys; increased risk of cancer	Discharge from petroleum refineries
Glyphosate	0.7	0.7	Kidney problems; reproductive difficulties	Runoff from herbicide use
Heptachlor	zero	0.0004	Liver damage; increased risk of cancer	Residue of banned termiticide
Heptachlor epoxide	zero	0.0002	Liver damage; increased risk of cancer	Breakdown of heptachlor
Hexachlorobenzene	zero	0.001	Liver or kidney problems; reproductive difficulties; increased risk of cancer	Discharge from metal refineries and agricultural chemical factories
Hexachlorocyclopentadiene	0.05	0.05	Kidney or stomach problems	Discharge from chemical factories
Lindane	0.0002	0.0002	Liver or kidney problems	Runoff/leaching from insecticide used on cattle, lumber, gardens
Methoxychlor	0.04	0.04	Reproductive difficulties	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Oxamyl (Vydate)	0.2	0.2	Slight nervous system effects	Runoff/leaching from insecticide used on apples, potatoes, and tomatoes

Polychlorinated biphenyls (PCBs)	zero	0.0005	Skin changes; thymus gland problems; immune deficiencies; reproductive or nervous system difficulties; increased risk of cancer	Runoff from landfills; discharge of waste chemicals
Pentachlorophenol	zero	0.001	Liver or kidney problems; increased cancer risk	Discharge from wood preserving factories
Picloram	0.5	0.5	Liver problems	Herbicide runoff
Simazine	0.004	0.004	Problems with blood	Herbicide runoff
Styrene	0.1	0.1	Liver, kidney, or circulatory system problems	Discharge from rubber and plastic factories; leaching from landfills
Tetrachloroethylene	zero	0.005	Liver problems; increased risk of cancer	Discharge from factories and dry cleaners
Toluene	1	1	Nervous system, kidney, or liver problems	Discharge from petroleum factories
Toxaphene	zero	0.003	Kidney, liver, or thyroid problems; increased risk of cancer	Runoff/leaching from insecticide used on cotton and cattle
2,4,5-TP (Silvex)	0.05	0.05	Liver problems	Residue of banned herbicide
1,2,4-Trichlorobenzene	0.07	0.07	Changes in adrenal glands	Discharge from textile finishing factories
1,1,1-Trichloroethane	0.20	0.2	Liver, nervous system, or circulatory problems	Discharge from metal degreasing sites and other factories
1,1,2-Trichloroethane	0.003	0.005	Liver, kidney, or immune system problems	Discharge from industrial chemical factories
Trichloroethylene	zero	0.005	Liver problems; increased risk of cancer	Discharge from metal degreasing sites and other factories
Vinyl chloride	zero	0.002	Increased risk of cancer	Leaching from PVC pipes; discharge from

				plastic factories
Xylenes (total)	10	10	Nervous system damage	Discharge from petroleum factories; discharge from chemical factories

Radionuclides

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Alpha particles	none[7] ---------- zero	15 picocuries per Liter (pCi/L)	Increased risk of cancer	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation
Beta particles and photon emitters	none[7] ---------- zero	4 millirems per year	Increased risk of cancer	Decay of natural and man-made deposits of certain minerals that are radioactive and may emit forms of radiation known as photons and beta radiation
Radium 226 and Radium 228 (combined)	none[7] ---------- zero	5 pCi/L	Increased risk of cancer	Erosion of natural deposits
Uranium	zero	30 ug/L as of 12/08/03	Increased risk of cancer, kidney toxicity	Erosion of natural deposits

Notes

[1] Definitions:
Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.
Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.
Maximum Residual Disinfectant Level (MRDL) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
Maximum Residual Disinfectant Level Goal (MRDLG) - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
Treatment Technique - A required process intended to reduce the level of a contaminant in drinking water.

[2] Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million.

[3] EPA's surface water treatment rules require systems using surface water or ground water under the direct influence of surface water to (1) disinfect their water, and (2) filter their water or meet criteria for avoiding filtration so that the following contaminants are controlled at the following levels:

- Cryptosporidium (as of1/1/02 for systems serving >10,000 and 1/14/05 for systems serving <10,000) 99% removal.
- *Giardia lamblia:* 99.9% removal/inactivation
- Viruses: 99.99% removal/inactivation
- *Legionella:* No limit, but EPA believes that if *Giardia* and viruses are removed/inactivated, *Legionella* will also be controlled.
- Turbidity: At no time can turbidity (cloudiness of water) go above 5 nephelolometric turbidity units (NTU); systems that filter must ensure that the turbidity go no higher than 1 NTU (0.5 NTU for conventional or direct filtration) in at least 95% of the daily samples in any month. As of January 1, 2002, turbidity may never exceed 1 NTU, and must not exceed 0.3 NTU in 95% of daily samples in any month.
- HPC: No more than 500 bacterial colonies per milliliter.
- Long Term 1 Enhanced Surface Water Treatment (Effective Date: January 14, 2005); Surface water systems or (GWUDI) systems serving fewer than 10,000 people must comply with the applicable Long Term 1 Enhanced Surface Water Treatment Rule provisions (e.g. turbidity standards, individual filter monitoring, Cryptosporidium removal requirements, updated watershed control requirements for unfiltered systems).
- Filter Backwash Recycling; The Filter Backwash Recycling Rule requires systems that recycle to return specific recycle flows through all processes of the system's existing conventional or direct filtration system or at an alternate location approved by the state.

[4] more than 5.0% samples total coliform-positive in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive per month.) Every sample that has total coliform must be analyzed for either fecal coliforms or *E. coli* if two consecutive TC-positive samples, and one is also positive for *E.coli* fecal coliforms, system has an acute MCL violation.

[5] Fecal coliform and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Disease-causing microbes (pathogens) in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. These pathogens may pose a special health risk for infants, young children, and people with severely compromised immune systems.

[6] Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants:

- Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L). Chloroform is regulated with this group but has no MCLG.
- Haloacetic acids: dichloroacetic acid (zero); trichloroacetic acid (0.3 mg/L). Monochloroacetic acid, bromoacetic acid, and dibromoacetic acid are regulated with this group but have no MCLGs.

[7] MCLGs were not established before the 1986 Amendments to the Safe Drinking Water Act. Therefore, there is no MCLG for this contaminant.

[8] Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed the action level, water systems must take additional steps. For copper, the action level is 1.3 mg/L, and for lead is 0.015 mg/L.

[9] Each water system must certify, in writing, to the state (using third-party or manufacturer's certification) that when acrylamide and epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows:

- Acrylamide = 0.05% dosed at 1 mg/L (or equivalent)
- Epichlorohydrin = 0.01% dosed at 20 mg/L (or equivalent)

National Secondary Drinking Water Regulations

National Secondary Drinking Water Regulations (NSDWRs or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, states may choose to adopt them as enforceable standards.

- For more information, read Secondary Drinking Water Regulations: Guidance for Nuisance Chemicals.

Contaminant	Secondary Standard
Aluminum	0.05 to 0.2 mg/L
Chloride	250 mg/L
Color	15 (color units)
Copper	1.0 mg/L
Corrosivity	noncorrosive
Fluoride	2.0 mg/L
Foaming Agents	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L
Odor	3 threshold odor number
pH	6.5-8.5
Silver	0.10 mg/L
Sulfate	250 mg/L
Total Dissolved Solids	500 mg/L
Zinc	5 mg/L

Last updated on Wednesday, August 13th, 2003
URL: http://www.epa.gov/safewater/mcl.html

Chromium (Cr) and its compounds

Forms of chromium

For the purpose of evaluating health impact, it is important to distinguish between three forms of chromium.

Metal chromium (chromium (0)) is used mainly for making steel and other alloys. Little is known about the health effects of this form of chromium. However there is no reason to believe that chromium (0) is a major cause for concern.

Chromium (III) is the form of chromium naturally found in the environment. It is used for brick lining for high-temperature industrial furnaces and for making alloys, chrome plating, dye manufacture, leather tanning and wood preserving. In air, most of the chromium is from man-made sources in the form of chromium (III). This form is also an essential nutrient. An intake of 50 to 200 µg of chromium (III) per day is recommended for adults. Chromium (III) is required for the body to utilize sugars, proteins and fat properly. Insufficient levels of chromium (III) may cause weight loss, impact growth, cause diabetes-like conditions and affect the nervous system. Chromium (III) appears to enhance sensitivity to insulin by facilitating the interaction of insulin with its receptor site. The main concern with the exposure to chromium (III) appears to be allergic reactions causing skin rashes as well as redness and swelling of the skin in sensitive people.

Chromium (VI) is released into the environment primarily as a result of industrial activity. Chromium (VI) is not an essential nutrient. High air levels (2 $\mu g/m^3$) may cause irritation of nasal mucosa, nose bleeds, ulcers and holes in the nasal septum. High exposure levels may also cause skin ulcers. Sensitive people may develop skin allergies similar to those caused by chromium (III). Very high ingested doses may cause stomach upset, ulcers, convulsion, liver or kidney damage, or death. Such effects are observed only at high doses, which are not normally encountered in food or drinking water. The main cause for concern with chromium (VI) is induction of lung cancer after long-term exposure to this toxicant. Because chromium (VI) is the most toxic of the three forms of chromium, the focus of the assessment is on this compound.

1. Physico-chemical properties (based on ATSDR, 1993)

Chromium is a metal, a naturally occurring element found in rock and soil as well as in the tissues of animals and plants. The physico-chemical properties of this metal and its compounds are listed in table 1.

Table 1. Physico-chemical properties of chromium and chromium-containing compounds.

Characteristic	Chromium (0)	Chromium (III) acetate, monohydrate	Chromium (III) nitrate, nonahydrate	Chromium (III) chloride
synonyms	chrome	acetic acid, chromium salt	Nitric acid, chromium (III) salt, nonahydrate; chromium nitrate, nonahydrate	chromium trichloride
chemical formula	Cr	$Cr(CH_3COO)_3.H_2O$	$Cr(NO_3)_3.9H_2O$	$CrCl_3$
CAS No.	7440-47-3	25013-82-5	7789-02-8	10025-73-7
Molecular Weight	52	247.15	400.15	158.36
Colour	steel-grey	gray-green or bluish green	Purple or violet	Purple or violet
Physical state	solid	solid	solid	solid
Melting point °C	1857	no data	60	1150
Boiling point °C	2672	no data	decomposes @ 100	sublimes @ 1300
Density, g/cm^3	7.2 @ 28°C	no data	no data	2.76 @ 15 °C
Odour	no data	no data	no data	no data
Odour threshold water	no data	no data	no data	no data
air	no data	no data	no data	no data
Solubility				
water	insoluble	soluble	soluble	slightly soluble in hot water
organic solvents	insoluble in common organic solvents	insoluble in ethanol	soluble in ethanol and acetone	Insoluble in common organic solvents

Characteristic	Chromium (III) chloride hexahydrate	Ferrochromite [chromium (III)]	Chromium (III) oxide	chromium (III) phosphate
synonyms	Hexaaquachromium (III) chloride	chromite	chromium sesquioxide; dichromium trioxide	chromium orthophosphate; phosphoric acid, chromium (III) salt
chemical formula	$Cr(Cl)_3.6H_2O$	$FeCr_2O_4$	Cr_2O_3	$CrPO_4$
CAS No.	10060-12-5	1306-31-2	1306-38-9	7789-04-0
Molecular Weight	266.45	223.84	151.99	146.97
Colour	violet	brown-black	green	gray-brown to black
Physical state	solid	solid	solid	solid
Melting point °C	83	no data	2266	>1800
Boiling point °C	no data	no data	4000	no data
Density, g/cm^3	1.76	4.97 @ 20°C	5.21	2.94 @ 32.5 °C
Odour	no data	no data	no data	no data
Odour threshold water	no data	no data	no data	no data
air	no data	no data	no data	no data
Solubility water	585 g/L @ 25 °C	insoluble	insoluble	insoluble
organic solvents	soluble in ethanol	no data	insoluble in ethanol	no data

Characteristic	Chromium (III) sulphate	sodium chromite [chromium (III)]	Chromium (IV) oxide	Amonium dichromate [chromium (VI)]
synonyms	sulphuric acid, chromium (III) salt	no data	chromium dioxide	chromic acid, diamonium salt
chemical formula	$Cr_2(SO_4)_3$	$NaCrO_2$	CrO_2	$(NH_4)_2Cr_2O_7$
CAS No.	10101-53-8	12314-42-0	12018-01-8	7789-09-5
Molecular Weight	392.16	106.98	83.99	252.06
Colour	violet or red	no data	brown – black	orange
Physical state	solid	no data	solid	solid
Melting point °C	no data	no data	decomposes @ 300°C	decomposes @ 170°C
Boiling point °C	no data	no data	not applicable	not applicable
Density, g/cm^3	3.01	no data	no data	2.15 @ 25°C
Odour	no data	no data	no data	no data
Odour threshold water	no data	no data	no data	no data
air	no data	no data	no data	no data
Solubility water	insoluble	no data	insoluble	308 g/L @15°C
organic solvents	slightly soluble in ethanol	no data	no data	soluble in ethanol

Characteristic	Calcium chromate [chromium (VI)]	Chromium (VI) oxide	Lead chromate [chromium (VI)]	Potasium chromate [chromium (VI)]
synonyms	chromic acid, calcium salt	chromic acid, chromic anhydride	chromic acid, lead salt	chromic acid, dipotasium salt
chemical formula	$CaCrO_4$	CrO_3	$PbCrO_4$	K_2CrO_4
CAS No.	13765-19-0	1333-82-0	7758-97-6	7789-00-6
Molecular Weight	156.07	99.99	323.18	194.20
Colour	yellow	red	yellow	yellow
Physical state	solid	solid	solid	solid
Melting point °C	no data	196	844	968.3
Boiling point °C	no data	decomposes	decomposes	no data
Density, g/cm^3	2.89	2.7 @ 25 °C	6.12 @ 15 °C	2.73 @ 18°C
Odour	no data	odourless	no data	no data
Odour threshold water	no data	no data	no data	no data
air	no data	no data	no data	no data
Solubility water	22.3g/L	617g/L @ 0 °C	58 µg/L	629 g/L @ 20 °C
organic solvents	no data	soluble in ethanol and ether	insoluble in acetic acid	insoluble in ethanol

Characteristic	Potasium dichromate [chromium (VI)]	Sodium chromate [chromium (VI)]	sodium dichromate, dihydrate [chromium (VI)]	strontium chromate [chromium (VI)]	Zinc chromate [chromium (VI)]
synonyms	chromic acid, dipotassium salt	chromic acid, disodium salt	chromic acid, disodium salt, dihydrate	chromic acid, strontium salt	chromic acid, zinc salt
chemical formula	$K_2Cr_2O_7$	Na_2CrO_4	$Na_2Cr_2O_7.2H_2O$	$SrCrO_4$	$ZnCrO_4$
CAS No.	7778-50-9	7775-11-3	7789-12-0	7789-06-2	13530-65-9
Molecular Weight	294.18	161.97	298.00	203.61	181.37
Colour	red	yellow	red	yellow	lemon-yellow
Physical state	solid	solid	solid	solid	solid
Melting point °C	398	792	356.7	no data	no data
Boiling point °C	decomposes @ 500	no data	decomposes @ 400	no data	no data
Density, g/cm^3	2.676 @ 25 °C	2.710-2.736	2.52 @ 13 °C	3.895 @ 15 °C	3.4
Odour	odourless	no data	no data	no data	odourless
Odour threshold water	no data	no data	no data	no data	no data
air	no data	no data	no data	no data	no data
Solubility water	49 g/L @ 0 °C	873 g/L @ 30 °C	2300 g/L @ 0 °C	1.2 g/L @ 15 °C	insoluble
Organic solvents	insoluble in ethanol	soluble in methanol	insoluble in ethanol	soluble in acetyl acetone, acetone	insoluble in acetone

Purposely left blank.

Sources (Based on ATSDR, 1993)

The largest source of chromium in air is the combustion of fossil fuels (oil-based and coal-based). However, most of the chromium from this source is chromium (III). The largest sources of chromium (VI) are chemical manufacturing processes. Chrome plating, steel welding and chromium (VI) manufacturers and industrial users (textile industry, manufacturers of dyes and pigments etc.) can discharge chromium (VI) waste into the waterways. The soil levels of chromium (VI) are increased primarily by disposal of commercial products containing chromium, industrial waste containing chromium and by coal ash from electric utilities.

2. Environmental Fate (Based on ATSDR, 1993)

In air, chromium is present mostly in the form of dust particulate (median diameter of about 1 μm). Rain or snow may help settle chromium to the ground or waterways. Airborne chromium (VI) may be reduced to chromium (III) by (V^{2+}, V^{3+}, VO^{2+}, Fe^{2+}, HSO^{3-} and AS^{3+}). The particles of chromium remain in air for only a short time (days) before settling.

In the water, most chromium is insoluble and is found mostly as part of the sediment. Chromium (VI) tends to get reduced to chromium (III) in the sediment, but relatively slowly. Some chromium is in a water-soluble form and may persist in the water column. Under anaerobic conditions, chromium (VI) is reduced quickly (hours to days) to chromium (III). Under aerobic conditions, slow oxidation (years) from chromium (III) to chromium (VI) may take place. Chromium does not bioaccumulate in fish, but the bottom-feeding invertebrates do accumulate this substance. Terrestrial plants may have elevated levels of chromium in the roots but minimal increases were observed in the above ground component of the edible plants. There is no indication of biomagnification of chromium along the terrestrial food chain.

In soils, chromium exists primarily in the water-insoluble form. In this form, it will be firmly attached to soil and display little mobility within the soil strata. A small proportion of chromium in soils is water-soluble. This form may be mobile and contaminate ground water. Most soil conditions favour chromium (III) over chromium (VI).

The population is normally exposed to chromium primarily from food (about 96%) and to a lesser degree from drinking water (about 3%) and air (about 1%). Dermal exposure is possible from chrome-treated consumer goods, such as wood treated with copper dichromate or leather tanned with chromic sulphate.

The subpopulations that may be exposed to higher than normal levels of chromium are those living near the following locations.

- landfill sites with chromium-containing waste
- industrial sites which manufacture or use chromium
- cement-producing plants, because cement contains chromium
- industrial cooling towers, which use chromium as rust inhibitors
- waterways that receive discharges from electroplating, leather tanning and textile industries
- major roadways, because of the emissions from brake linings and from the catalytic converters

In addition, subpopulations exposed to tobacco products may also be exposed to higher levels of chromium, since these products contain chromium.

3. Toxicokinetics (Based on ATSDR, 1993)

The differences in absorption of chromium in different valence states may be the most important factor in the toxicity of this metal from different sources. Chromium (VI) is more readily absorbed across the body barriers (lung tissue, gastrointestinal tract and skin) than trivalent chromium. However in the stomach, hexavalent chromium (chromium VI) is largely reduced to chromium (III). As a result, chromium (VI) is less readily absorbed by oral route than by the other routes. In order to exert its toxicity, chromium (VI) needs to cross the cellular membranes and it enters the cells much more readily than chromium (III). Inside the cells, chromium (VI) is reduced, mostly to chromium (V). During the reduction process, highly reactive molecules (radicals) are formed, which may react with surrounding cellular material and thus cause tissue damage. For example, after exposure to chromium (VI) in an animal model, chromium (V) has been shown to react with DNA, forming chromium (V)-glutathione DNA adducts. This transformation may be the cause of the tumour-initiating capability of chromium (VI) and some of its other toxic effects (see below).

Chromium is distributed to most tissues to some degree, but the highest levels tend to be found consistently (in no order) in the lung, liver, spleen and kidneys. The lung levels are particularly high when exposure takes place via the respiratory tract. The chromium levels found in the lungs are considerably lower when exposure is via routes other than inhalation

Inorganic chromium (III) can be incorporated into a dinicotinato chromium (III) glutathione-like complex (GTF). This complex has not as yet been fully characterized but believed to be the biologically active form of chromium, which facilitates the action of insulin. Chromium (VI) can be reduced to chromium (III) before it enters the tissues in the stomach, by gastric acid and ascorbate and also in the lungs by the epithelial lining fluid (ELF). Once it crosses into the cells, chromium (VI) can be reduced to chromium (III) through a process requiring the enzymes, cytochrome P450 and an endogenous reducing agent NADPH. Alternatively, chromium (VI) can be reduced by glutathione to a chromium (V)-glutathione complex. Chromium (VI) is ultimately reduced to chromium (III) in the cell and eliminated from the cell in the form of chromium (III)-glutathione complex and excreted in the urine.

4. Human Health effects

Chromium can induce, at high enough doses, a range of systemic effects. However, at much lower environmental levels, humans are unlikely to experience the same effects (ATSDR, 1993). For instance, inhaled chromium (VI) at air levels above 20 ng/m^3 may cause irritation to nasal mucosa, nosebleeds, ulcers and holes in the nasal septum. While the typical level of chromium in ambient air is about 10 to 30 ng/m^3, most of the chromium in the ambient air is chromium (III) and not the more toxic chromium (VI) (ATSDR, 1993).

Exposure to low doses of chromium (any form) induces allergic reactions causing skin rashes as well as redness and swelling of the skin in sensitive people. Exposure to chromium (VI) and perhaps chromium (III) may also cause reproductive effects (ATSDR, 1993). However, there are no human data, which allow one to estimate the potency of chromium in humans directly. Furthermore, to estimate the potency of chromium in humans based on animal data is difficult. Therefore what the health impact may be at environmentally relevant levels is unclear. Chromium (III) is an essential element in human nutrition and the recommended daily intake for adults is between 50 and 200 µg (NRC, 1989). For other age groups, the recommended daily intake is lower.

Chromium (VI) is genotoxic in humans and in a number of experimental tests (ATSDR, 1993). But probably the most important effect of chromium is its cancer-inducing potential. Based on the weight of evidence, International Agency of Research on Cancer (IARC, 1990) classified chromium (VI) into Group 1 (*The agent is carcinogenic to humans*). USEPA (1998b) classified Cr (VI) into Group A (*known human carcinogen*) by the inhalation route of exposure, but into Group D (*not classified as to its human carcinogenicity*) by oral exposure, reflecting its low potency by this route.

On the other hand, Chromium (III) was classified by IARC (1990) into Group 3 (*agent is unclassifiable as to carcinogenicity in humans*) and USEPA (1998a) placed it into Group D (*not classified as to its human carcinogenicity*). However, the classification of hexavalent chromium as a known human carcinogen raises some concern for the carcinogenic potential of trivalent chromium (USEPA, 1998a). Canadian Environmental Protection Act (CEPA, 1994) classified chromium (III) into Group VI (*unclassifiable with respect to carcinogenicity in humans*).

5. Potency

CHROMIUM (III)

USEPA (1998a) developed an (oral) Reference Dose (RfD) of 1.5 mg/kg/day for chromium (III). The assessment is based on the study of Ivankovic and Preussmann (1975). In this study, rats were fed chromium (III) oxide, Cr_2O_3, in the diet, 5 days a week for 600 days. Chromium was administered as 0, 1%, 2%, or 5% Cr_2O_3. On completion of the treatment, the animals were maintained until they became moribund or died. All tissues were then examined histologically. No effect was observed at any treatment level. USEPA (1998c) selected the treatment group receiving 5% Cr_2O_3 in the diet to establish the *No Adverse Effect Level* (NOAEL). The dose of Cr (III) corresponding to the NOAEL was estimated at 1468 mg/kg/day.

In a separate set of experiments, Ivankovic and Preussmann (1975) fed rats 0, 2%, or 5% Cr_2O_3 in bread, 5 days/week for 90 days. No changes were observed in serum protein, bilirubin, haematology, urinalysis, and histopathology, but the livers and spleens weighed less in the high-dose group. The high dose is equivalent to 1,400 mg/kg/day of Cr_2O_3.

In order to derive the RfD, USEPA (1998c) divided the NOAEL value of 1468 mg/kg/day by an *uncertainty factor* (UF) of 100 and again by a *modifying factor* (MF) of 10. The UF accounts for species difference in sensitivity and for the variation of sensitivity within human population to the effects of chromium (III). The MF is designed to compensate for database deficiencies. No data are available for mammals other than rodents and there is a concern about possible reproductive effects. In addition, some limitations of the Ivankovic and Preussmann (1975) study have also been raised.

CHROMIUM (VI)

Oral-Non-Cancer

USEPA (1998b) developed a (oral) *Reference Dose* (RfD) for chromium (VI) of 3 E-3 mg/kg/day based on the *No Adverse Effect Level* (NOAEL) of 25 mg/L. The NOAEL was derived from the study of MacKenzie *et al.* (1958). In this study, rats received drinking water containing 0.45-11.2 mg/L chromium (VI) (potassium chromate, K_2CrO_4) for 1 year. The control animals received distilled water. In a second experiment rats received 25 mg/L chromium (VI) in the form of K_2CrO_4 or chromium (III) in the form of chromic chloride or distilled water. No significant adverse effects were seen in terms of appearance, weight gain, or food consumption, and there were no pathologic changes in the blood or other tissues in any treatment group. The rats receiving chromium (VI) showed an approximate 20% reduction in water consumption. The drinking water concentration of 25 mg/L was converted to daily consumption of 2.5 mg of chromium (VI) per kg body weight based on a body weight of 0.35 kg and an average daily drinking water consumption of 0.035 L/day for the rat. This dose (2.5 mg of chromium (VI) /kg/day) was considered the NOAEL. The RfD was derived by dividing the NOAEL by an uncertainty factor of 300 and a modifying factor of 3. The uncertainty factor accounts for differences in sensitivity within the human population, for species differences and for a less than lifetime exposure regiment of the rats in the study of MacKenzie *et al.* (1958). A modifying factor of 3 was introduced as a conservative measure to account for concerns raised by the study of Zhang and Li (1987). This study showed adverse human health effects after drinking water containing approximately 20mg/L of chromium. Detailed information about exposure, magnitude and duration were not available in the study and the study was not considered sufficient to be used to develop a NOAEL or LOAEL.

Inhalation- Non-Cancer

USEPA (1998d) developed 2 *Reference Concentrations* (RfCs) for chromium (VI). The first one was developed for chromic acid mists and aerosols. The second was developed for chromium (VI) in a particulate form.

Aerosols

A RfC for aerosols was developed based an occupational study (Lindberg and Hedenstierna, 1983). Subjects exposed almost exclusively to chromic acid were divided into a low-exposure group, exposed to 8-hr, 5 days a week time-weighted average (TWA) below 0.002 mg/m^3 and a high-exposure group exposed above this level. Office employees were used as controls for nose and throat symptoms and auto mechanics were the controls for lung function measurements. Smoking habits of workers were evaluated as part of the study. The authors concluded that 8-hour mean exposures to chromic acid above 0.002 mg/m^3 may cause a transient decrease in lung function, and that short-term exposures to greater than 0.02 mg/m^3 may cause septal ulceration and perforation.

Based on the results of this study, USEPA (1998d) determined the LOAEL to be 0.002 mg/m^3, for an 8-hr TWA exposure to chromium (VI) mists. After conversion to continuous exposure, the LOAEL became 7.14 E-4 mg/m^3. This continuous exposure LOAEL was divided by an uncertainty factor of 90 for the following reasons.

- to extrapolate from a subchronic to a chronic exposure (factor of 3)
- to account for extrapolation from a LOAEL to a NOAEL (factor of 3)
- to account for inter-human variation (factor of 10)

The result is an RfC of 8 E-6 mg/m^3 for upper respiratory effects caused by chromic acid mists and dissolved chromium (VI) aerosols (USEPA, 1998d).

Particulates

Glaser *et al.* (1985, 1990) studied the effects of particulate chromium (VI) on the lower respiratory tract. In the 1990 study, rats were exposed to sodium dichromate at 0.05 - 0.4 mg $Cr(VI)/m^3$ 22 hr/day, 7 days/wk for 30-90 days. Chromium-induced effects occurred in a strong dose-dependent manner and involved respiratory tract structure and function, white blood cell count, and body weight.

Glaser *et al.* (1985) exposed 5-week-old male Wistar rats to aerosols of sodium dichromate at concentrations ranging from 0.025 to 0.2 mg $Cr(VI)/m^3$, 22 hr/day for 28 days or 90 days. Again the chromium-induced effects occurred in a dose-dependent manner. Effects on the lung and spleen and immune system were observed.

Together, these studies present dose-dependent results on sensitive indicators of lower respiratory toxicity. Potential upper respiratory impacts resulting from the exposures were not addressed.

The USEPA (1998d) assessment made use of the benchmark concentration (BMC) derived by Malsch *et al.* (1994) for chromium (VI). The BMC range was developed for lung and spleen weights and for indicators of lung structure and function based on the two studies by Glaser *et al.* (1985, 1990). The data with exposures of less than 90 days were excluded from the assessment. Malsch *et al.* (1994) defined the benchmark concentration as the 95% lower confidence limit on the dose corresponding to a 10% relative change in the endpoint when compared to the control. Dose-effect data were adjusted to account for discontinuous exposure (22 hr/day) and the maximum likelihood model was used to fit continuous data to a polynomial mean response regression, yielding maximum likelihood estimates of 0.036 - 0.078 mg/m^3 and BMCs of 0.016 - 0.067 mg/m^3. Next, Malsch *et al.* (1994) applied dosimetric adjustments and uncertainty factors to determine a RfC based on the following equation.

$$RfC = \frac{BMC \times RDDR}{UF_A \times UF_F \times UF_H}$$

Table 4. A summary of sediment quality assessment guidelines applicable to Florida coastal waters.

Substance	Total Number of Records	Number of Entries in the EDS	Number of Entries in the NEDS	Sediment Quality Assessment Guidelines TEL	Sediment Quality Assessment Guidelines PEL
Metals (SQAGs in mg/kg)					
Arsenic	295	39	256	7.24	41.6
Cadmium	433	107	326	0.676	4.21
Chromium	354	53	301	52.3	160
Copper	440	105	335	18.7	108
Lead	402	95	307	30.2	112
Mercury	331	66	265	0.13	0.696
Nickel	355	23	332	15.9	42.8
Silver	190	35	155	0.733	1.77
Tributyltin	72	6	66	ID	ID
Zinc	411	96	315	124	271
Polychlorinated Biphenyls (PCBs; SQAGs in µg/kg)					
Total PCBs	199	65	134	21.6	189
Polycyclic Aromatic Hydrocarbons (PAHs; SQAGs in µg/kg)					
Acenaphthene	240	62	178	6.71	88.9
Acenaphthylene	209	36	173	5.87	128
Anthracene	259	70	189	46.9	245
Fluorene	263	73	190	21.2	144
2-methylnaphthalene	189	40	149	20.2	201
Naphthalene	256	57	199	34.6	391
Phenanthrene	268	74	194	86.7	544
Sum LMW-PAHs	274	69	205	312	1442

REFERENCES. 15-23 are standard geological references.

27

Public Utilities

City Home Page Site Map Contact Us

[BACK]

Services and Policies

Water Division Mission Statement

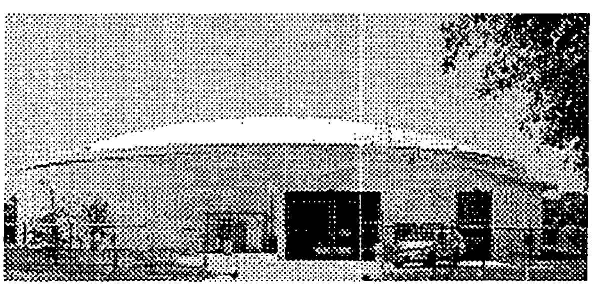
The City of Clearwater Water Division shall insure that the Clearwater water supply meets or exceeds Federal Safe Drinking Water Standards and other regulations and orders; shall provide a sufficient volume of water to meet the daily needs and desires of the Clearwater community; and shall maintain a dependable and uninterrupted water treatment and delivery service to Clearwater users.

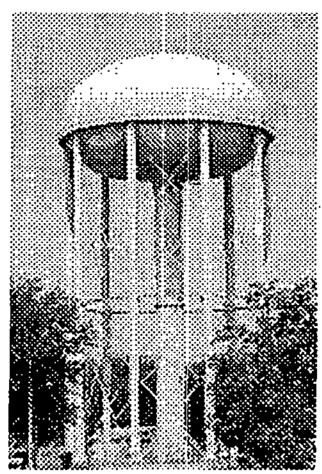
Responsibilities of the Water Division

The Water Distribution Division is responsible for the maintenance and repair of the water distribution mains, fire hydrants, and service lines; and for installing or disconnecting all water meters. The Distribution Division installs and maintains water services from the water main to the curb-stop -- a shut-off valve located near the curb. Currently, there are 3,993 fire hydrants in service, 8258 valves, 586 miles of water main in service, and 23 miles of reclaimed water main.

The Meter Shop Division is responsible for the maintenance and repair of the water meters, and backflow devices, as well as providing the on/off water services to the customers of the City of Clearwater. Currently there are approximately 40,000 water meters and 4,900 backflow devices in service in service in the City of Clearwater.

The water division has three storage facilities for water: a 5 million-gallon reservoir located by on Saturn Avenue; a 10 million-gallon reservoir located on S.R. 580; a 5 million-gallon reservoir located by the soccer field by Drew St. and U.S Highway 19 N.





Additionally there are three elevated tanks within the City of Clearwater; each has a 1 million-gallon capacity.

Last year, the City of Clearwater supplied 5,150,426,000 (5 *Billion*, 150 *Million*, 426 *Thousand*) gallons of water to our customers. This is approximately 100 gallons of water per person per day.

City Water Supply/Quality

22.7% 1,155

Clearwater's drinking water comes from a groundwater source called the Floridan Aquifer. This aquifer is one of the major sources of ground water in the United States. It underlies all of Florida, southern Georgia, and some parts of Alabama and South Carolina . Our customers use approximately 15 million gallons of potable water daily. From our own 15 wells we pump about 3.4 million gallons daily with the remaining amount being purchased from the Pinellas County Water System. Each day, Clearwater Water Division produces a safe, dependable drinking water supply . We are proud of our history of quality service. To maintain our commitment to you, we routinely collect and test water samples -- from the source waters to the City of Clearwater -- checking purity long before it reaches our customers. We stay abreast of advancements in technology, health science and government regulations in order to provide a constant and safe supply of water. Through foresight and planning, efficiency in operations, and focus on excellence In customer service, we can assure you the best quality drinking water at an economical price well into the 21st century.

Utility Customer Service

Payment for water bills can be made at Utility Customer Service located at 100 S. Myrtle Avenue inside the Municipal Services Building, between 8:00 A.M. and 5:00 P.M. After hours payments can also be made in the drop box outside the customer window. All payments received after 5:30 P.M. will be processed on the next business day. The number to call concerning billing questions is (727) 562-4600.

Updated June 23, 2003 - Contact Webmaster

25

CITY OF DUNEDIN
REVERSE OSMOSIS WATER TREATMENT FACILITY
1401 County Road 1
(727) 298-3100

HISTORY

For most municipalities in the West Central Coastal areas of Florida, potable water has become a diminishing commodity. A majority of the cities and towns located within Pinellas County purchase water from Tampa Bay Water (TBA). Only Belleair and Dunedin have their own wellfields.

Dunedin was plagued with severe water quality problems resulting from aggressive, iron laden water being supplied by its dispersed wellfield. Reduced quantity available in the aquifer and the threat of salt water intrusion into the aquifer was also becoming a reality. These problems along with stricter water quality standards from the Environmental Protection Agency magnified the need for additional water treatment.

The City of Dunedin's wellfield. consists of 20 wells. The water withdrawn from the Floridan aquifer is regulated by the South West Florida Water Management District (SWFWMD). Current permitted withdrawal rates are 6.98 million gallons per day (mgd) average and 8.725 mgd peak month. The Fiscal Year 1996/97 average demand for Dunedin's 36,000 residents was 3.9 mgd. This water was used primarily for residential consumption.

The water system consists of 7.5 miles of raw water transmission piping, one-1 million gallon elevated storage tank, four-2 million gallon ground storage tanks, one treatment plant, 1,015 fire hydrants, and approximately 138 miles of distribution piping ranging in size from 2 to 18 inches in diameter.

CURRENT STATUS

In 1988, the City began exploring conventional lime softening and membrane softening treatment options. Since the cost of the two treatment techniques was comparable, it was decided to build a membrane softening treatment facility. This decision was based primarily on superior finished water quality as it related to pending trihalomethane regulations. Construction of the facility was financed with Revenue Bonds and began in December of 1990 at a cost of $10.5 million or approximately $1.00/gallon. This state-of-the-art facility provides Dunedin residents with high quality potable water and the ability to deal with the potential for deteriorating raw water quality and increased regulatory standards.

On June 8, 1992, portions of the new facility were placed into service. This entailed utilization of the pressure filters, 20 micron cartridge filters, degasifiers, chlorination, and pH control equipment. In September 1992, the RO process was brought on-line. The final phase, fluoridation, commenced during the month of October, 1992. The facility consists of the following process units: potassium permanganate chemical addition, pressure filtration, sulfuric acid injection, antiscalant injection, micron filtration, membrane softening, stabilization, degasification, chlorination, fluoridation, ground storage and high service pumping. Ammonia feed facilities are provided to allow for use of chloramine disinfection to control the total trihalomethane concentration in the finished water, should it become necessary in the future.

Dunedin's facility is the only in Florida and the largest in the United States to utilize greensand filtration as a pretreatment to Reverse Osmosis. This process primarily removes iron and hydrogen sulfide from the water. Each section of treatment will be discussed in further detail.

FUTURE

Due to the location of the City, salt water intrusion poses a threat to the quality of water which is available in the Floridan aquifer. With this in mind, separate piping was incorporated to accommodate blending of brackish water with the current well water to reduce the amount of withdrawal from the fragile Upper Floridan Aquifer. Membrane softening using reverse osmosis membranes can produce drinking water from a more saline supply. The facility as constructed can treat water up to 2,000 mg/L total dissolved solids (TDS). Modifications to the facility would allow it to treat water with even higher TDS concentrations. The first brackish water supply well has been constructed and is providing 250 gpm to the raw water supply. Another permitted seven brackish wells are being investigated.

The facility is currently capable of producing 9.5 mgd with provisions for expansion to a capacity of 12.0 mgd should future demand warrant.

PLANT OPERATION

Potassium Permanganate Injection and Pressure Filtration

Water entering the plant is called raw water. Upon entry, potassium permanganate is injected to convert soluble ferrous iron to insoluble ferric iron so it can be filtered out. Another benefit to potassium permanganate injection is the oxidation of hydrogen sulfide (hydrogen sulfide gives the rotten egg odor). This oxidation process is vital to the plant operation in that it filters out iron and sulfur bacteria which would otherwise deposit on the membrane surface and cause fouling. It also enables the City to "BLEND" filtered water back with the reverse osmosis (R/O) product water to naturally stabilize the water. This process will be discussed further during the stabilization process.

The water then enters the greensand pressure filters utilizing the water pressure provided by the supply wells. The filters are constructed as horizontal cylinders with layers of filtering material. The top layer is anthracite. It filters out the precipitated insoluble iron produced by the injection of the potassium permanganate. Manganese greensand is the middle layer. This layer absorbs any residual potassium permanganate left over in the water. It also filters out and converts any iron still left in the water at this point. The final layers are multi-sized gravel to support the upper layers and provides filtering for any particles which may have passed through the upper layers. All of the water entering the plant passes through this iron removal process.

Sulfuric Acid and Antiscalant Injection

Sulfuric acid is added to lower the pH of the water to prevent calcium carbonate scaling on the R/O membranes. Antiscalant (polyacrylic acid) is added to prevent calcium sulfate and barium sulfate scaling on the membrane. Any scaling on the membrane surface would prevent the passage of the water through the membrane. As scaling occurs, the pressure it takes to force the water through the membrane increases, which in turn increases the power requirement.

Micron Filtration

After the injection of chemicals to prevent scaling on the membranes, the water passes through a series of 5 micron polypropylene cartridge filters. These remove any silt, turbidity, or debris larger than 5 micron which could cause irreparable damage to the membrane surface. Bacteria or other organic matter can also be filtered out during this process. The micron filters cannot be cleaned and/or reused. They are changed out as the pressure loss across them dictates or the water quality from them deteriorates to a point that possible damage to the R/O membranes could occur. This step is the last and most important in the pre-treatment process for the membranes. The water is then termed pre-treated feedwater. All treatment done to this point is to protect the RO membranes from any scaling or fouling from natural constituents in the raw water.

Membrane Softening RO Units

The feed water pressure at this point is about 20 to 30 pounds per square inch. The R/O process requires pressure to force the water through a semi-permeable membrane, i.e. overcome the osmotic pressure. To provide this added pressure requirement, high pressure pumps are located between the micron filters and the R/O units. The pumps are a "manifolded" design. This means that all five of the pumps are available to pressurize the manifold pipe which supplies the feedwater to the R/O units.

The flow to the R/O units is regulated with a flow control valve based on the amount of product water to be produced by the unit. Feed pressures to the units are expected to rise as the membranes age. Initial feed pressures were 100 psi with a five year projected pressure of 120 psi. This pressure is also affected by the degree of salinity of the feedwater. As the raw water quality decreases, or a brackish water supply is further developed, more pressure will be needed to produce the same quantity of water.

The R/O membrane is a basic separation process. When the feedwater enters the membrane it is separated in "Product" and "Concentrate" water. The concentrate is 17% of the feed flow into the unit and is highly concentrated with the ions from the feedwater. The concentrate is then disposed of through a separate pipeline to the City's wastewater treatment plant where it is treated and becomes part of the effluent utilized by the Reclaimed Water System. The R/O membranes pass 83% of the feedwater through the membrane as it removes calcium and magnesium ions in the water. This water is called the "Product" water. It is then piped to the next step of treatment.

Degasification and Stabilization

The product water from the RO membranes at this point is very unstable and aggressive. There is very little calcium, magnesium, or alkalinity in the water. In order to provide a stabile, cost effective product to the consumer, filtered raw water is "Blended" with the R/O product water. This provides some natural stability to the water while reducing the cost of production. The blend water is filtered through the greensand pressure filters and 20 micron cartridge filters to ensure quality.

The degasification process removes any residual hydrogen sulfide in addition to stripping carbon dioxide. Carbon dioxide is indicative of corrosive water and results when pH of the feedwater is lowered and carbonate changes to bicarbonate and ultimately to carbon dioxide and water:

$$\mathbf{CO3 \leftrightarrow HCO3 \leftrightarrow H2CO3 \leftrightarrow CO2 + H20}$$

Degasification is performed by mixing air with the water to remove the hydrogen sulfide and carbon dioxide as gasses. The water enters two cylindrical towers from the top of the units and cascades downwards across a packing material. To more effectively remove the gasses, air is induced in the bottom of the units. The gasses emitted from these units is vented to the atmosphere. After the water exits the degasifier towers, it enters the clearwell located underneath.

Chlorination, pH Adjustment, Fluoridation, Ammonia Injection

As the water enters the clearwell, chlorine is added for disinfection. The clearwell was designed to allow for maximum contact between the chlorine and the water for complete disinfection.

A small amount of sodium hydroxide is added to the water to increase the pH of the water. This provides for a more stable water that is non-corrosive nor scale forming in the distribution system.

A grant from the Department of Health and Rehabilitative Services was obtained by the City to pay for a fluoride chemical feed system. Hydrofluosilicic acid is added to the water as a means to reduce dental caries. The dosage rate is 0.8 parts per million as fluoride.

With the possibility of more stringent regulations on total trihalomethanes being imposed by EPA, ammonia facilities were incorporated into the design of the plant. This provision for disinfection with chloramines is an alternative to major treatment changes should the TTHM regulations become more stringent.

Ground Storage, High Service Pumps

The water is pumped from the clearwell to the 2-two million gallon ground storage tanks located on plant site. At this point the water is available for pumping to the consumer.

OPERATING SPECIFICATIONS

RAW WATER SUPPLY

Upper Floridan Aquifer Fresh Water

19 Wells
- Varying Casing Depths to 80 ft.
- Varying Drill Depths to 300 ft.
- Varying Yields Between 100 and 1000 GPM
- 8.725 MGD Maximum Permitted Withdrawal
- 120 PPM Chloride Content
- 350 PPM Total Dissolved Solids
- 260 PPM Calcium and Magnesium Ions

Brackish Water

1 Well
- Casing Depth - 80 ft.
- Drill Depth - 400 ft.
- Yield - 200 - 300 GPM
- Chloride Content - 700 PPM

- Total Dissolved Solids - 1,600 PPM
- Hydrogen Sulfide - 4.2 PPM

7 Additional Wells Permitted by SWFWMD Under Investigation

PRE-TREATMENT

Potassium Permanganate - To Oxidize Iron and Hydrogen Sulfide
- 3 PPM of 3% solution

Pressure Filters - 5 Horizontal Mixed Media Pres. Filters
- 10.2 MGD Total Capacity
- 35 to 45 Hours Between Backwashing
- Backwash Rate of 12 gpm/sq.ft.
- Filtering Rate 3 to 5 gpm/sq.ft./min.

Sulfuric Acid - Calcium Carbonate scale Prevention
- to a pH of 4.0

Antiscalant - B.F. Goodrich AF600 for Prevention of Calcium and Barium Sulfate Scaling
- 3.0 PPM Dosage Rate

Micron Filtration - 4 Filter Housings With 5 Micron Polypropylene Cartridge Filters (RO Feed)
- 3 Filter Housings With 20 Micron Polypropylene Cartridge Filters (Blend)

MEMBRANE SOFTENING UNITS

High Pressure Pumps - 5 Pumps
- 125 Horsepower
- 1500 GPM Each

Membrane Type - Polyamide Spiral Wound Thin Film Composite
- Hydranautics PVD1 Softening Membrane (8½" dia. X 40" length)
- Hydranautics CPA2 Softening Membrane (8½" dia. X 40" length)

Membrane Units - Number of Units 4
- 83% Recovery
- 110 Pounds of Feed Pressure
- 1,500,000 Gallons per Day per Unit
- 23::12 Array
- 7 Element Vessels

POST-TREATMENT

Degasification - For Carbon Dioxide and Hydrogen Sulfide Removal
- 2 units 6 MGD Each

- Forced Draft Type

Chlorination - For Disinfection 2.0 PPM

Fluoridation - 0.8 PPM

Sodium Hydroxide - For Stability and pH Adjustment to 8.3

GROUND STORAGE AND PUMPING FACILITIES

Storage Tanks

- Two 2 Million Gallon Tanks at Treatment Plant
- One 1 Million Gallon Elevated Tank
- Two 2 Million Gallon Tanks offsite

Pumping Capacity

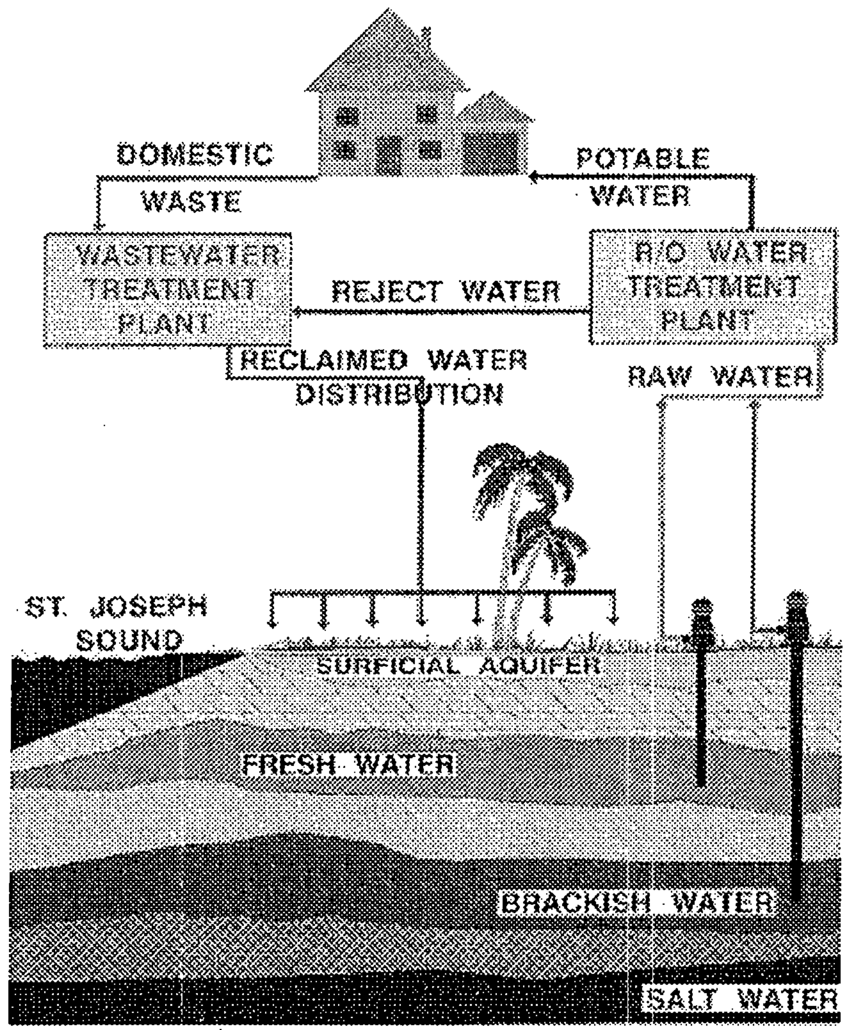
- One 60 HP @ 1,750 GPM
- One 75 HP @ 2,400 GPM
- One 100 HP @ 3,100 GPM
- Two 125 HP @ 3,650 GPM

CONCENTRATE DISCHARGE

- Sodium Hydroxide Injection for pH Control to 6.5 Prior to Discharge to the Wastewater Plant
- Inverted Siphon Pipeline to Wastewater Plant
- Treated and Disposed Through the Reclaimed Water System for Irrigation

[Top of Page] [R/O Process Schematic] [Dunedin Water Cycle]
[Water Page] [1997 Water Quality Report]

THE DUNEDIN WATER CYCLE



[Back to Water] [Public Works] [Home]

27

Public Utilities

City Home Page Site Map Contact Us

[BACK]

Services and Policies

Water Division Mission Statement

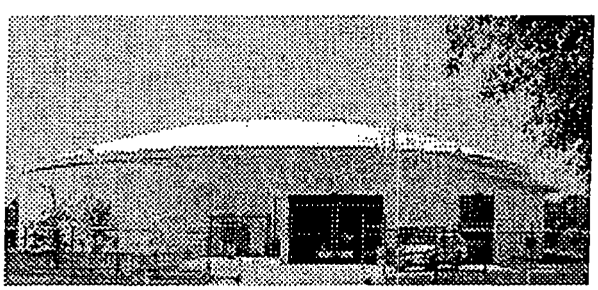
The City of Clearwater Water Division shall insure that the Clearwater water supply meets or exceeds Federal Safe Drinking Water Standards and other regulations and orders; shall provide a sufficient volume of water to meet the daily needs and desires of the Clearwater community; and shall maintain a dependable and uninterrupted water treatment and delivery service to Clearwater users.

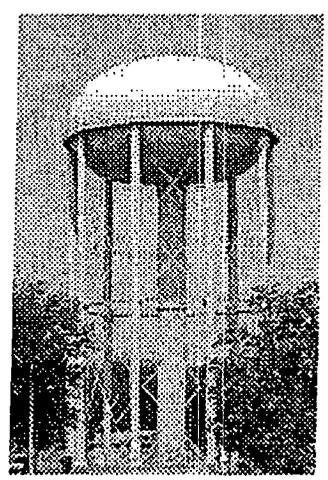
Responsibilities of the Water Division

The Water Distribution Division is responsible for the maintenance and repair of the water distribution mains, fire hydrants, and service lines; and for installing or disconnecting all water meters. The Distribution Division installs and maintains water services from the water main to the curb-stop -- a shut-off valve located near the curb. Currently, there are 3,993 fire hydrants in service, 8258 valves, 586 miles of water main in service, and 23 miles of reclaimed water main.

The Meter Shop Division is responsible for the maintenance and repair of the water meters, and backflow devices, as well as providing the on/off water services to the customers of the City of Clearwater. Currently there are approximately 40,000 water meters and 4,900 backflow devices in service in service in the City of Clearwater.

The water division has three storage facilities for water: a 5 million-gallon reservoir located by on Saturn Avenue; a 10 million-gallon reservoir located on S.R. 580; a 5 million-gallon reservoir located by the soccer field by Drew St. and U.S Highway 19 N.





Additionally there are three elevated tanks within the City of Clearwater; each has a 1 million-gallon capacity.

Last year, the City of Clearwater supplied 5,150,426,000 (5 *Billion*, 150 *Million*, 426 *Thousand*) gallons of water to our customers. This is approximately 100 gallons of water per person per day.

City Water Supply/Quality

22.7% 1,455

Clearwater's drinking water comes from a groundwater source called the Floridan Aquifer. This aquifer is one of the major sources of ground water in the United States. It underlies all of Florida, southern Georgia, and some parts of Alabama and South Carolina . Our customers use approximately 15 million gallons of potable water daily. From our own 15 wells we pump about 3.4 million gallons daily with the remaining amount being purchased from the Pinellas County Water System. Each day, Clearwater Water Division produces a safe, dependable drinking water supply . We are proud of our history of quality service. To maintain our commitment to you, we routinely collect and test water samples -- from the source waters to the City of Clearwater -- checking purity long before it reaches our customers. We stay abreast of advancements in technology, health science and government regulations in order to provide a constant and safe supply of water. Through foresight and planning, efficiency in operations, and focus on excellence In customer service, we can assure you the best quality drinking water at an economical price well into the 21st century.

Utility Customer Service

Payment for water bills can be made at Utility Customer Service located at 100 S. Myrtle Avenue inside the Municipal Services Building, between 8:00 A.M. and 5:00 P.M. After hours payments can also be made in the drop box outside the customer window. All payments received after 5:30 P.M. will be processed on the next business day. The number to call concerning billing questions is (727) 562-4600.

Updated June 23, 2003 - Contact Webmaster

PWS_ID	PWS_STATUS	PWS_NAME	PWS_ADDRES	PWS_CITY
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	CLEARWATER
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	CLEARWATER
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	CLEARWATER
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	CLEARWATER
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	CLEARWATER
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	CLEARWATER

Clearwater Top- PWS- 1 mile

PWS_ZIP5	PWS_PHON	PWS_C	PWS P	PWS_TYPE	P	PWS_SOURCE	PWS_POP_S	PWS_LAST_S	PWS_DESIGI	PWS_PRIMAR
33765	7275624960	52	SWP	C COMMUNITY			109350	10/16/2001	25000000	MUNICIPAL/CITY
33765	7275624960	52	SWP	C COMMUNITY			109350	10/16/2001	25000000	MUNICIPAL/CITY
33765	7275624960	52	SWP	C COMMUNITY			109350	10/16/2001	25000000	MUNICIPAL/CITY
33765	7275624960	52	SWP	C COMMUNITY			109350	10/16/2001	25000000	MUNICIPAL/CITY
33765	7275624960	52	SWP	C COMMUNITY			109350	10/16/2001	25000000	MUNICIPAL/CITY
33765	7275624960	52	SWP	C COMMUNITY			109350	10/16/2001	25000000	MUNICIPAL/CITY

PW:	WELL_IE	LOCATI(	WELL_NAME	FLUWID	WELL_STATU	LAT_DI	LAT_MI	LAT_SS	LONG_	LONG_	LONG_S
DHI	16048	48456	CLEARWATER WELL # 74	AAH0609	ACTIVE	27	59	43.4523	82	45	16.5475
DHI	16046	48454	CLEARWATER WELL # 65	AAH0611	ACTIVE	27	59	36.1223	82	45	9.6953
DHI	16045	48449	CLEARWATER WELL # 48	AAH0606	ACTIVE	27	58	31.9414	82	45	18.4241
DHI	16047	48459	CLEARWATER WELL # 66		ACTIVE	27	59	28.8872	82	45	16.2313
DHI	16049	48457	CLEARWATER WELL # 75	AAH0610	ACTIVE	27	59	41.5403	82	45	2.5417
DHI	23172	48460	CLEARWATER WELL # 73	AAH0612	ACTIVE	27	59	24.5280	82	45	24.5280

WELL_HEIGH	METI	DATUM	WELL_COORI	WELL_I	WELL_:	WELL_I	WELL_'	WELL_DEPTI	WELL_AVAI	OBJECTID
26.3410	DGP:	27	3/23/2001	1	1	4	1986	265	PERMANEN	881592
16.7370	DGP:	27	3/23/2001	1	1	2	1974	300	PERMANEN	882935
24.1890	DGP:	27	3/23/2001	1	1	1	1971	250	PERMANEN	884209
22.9240	DGP:	27	3/23/2001	1	1	3		224	PERMANEN	886489
26.3410	DGP:	27	3/23/2001	1	1	5	1986	201	PERMANEN	886801
21.2540	DGP:	83	3/23/2001	1	1	6		201	PERMANEN	889625

PWS_ID	PWS_STATUS	PWS_NAME	PWS_ADDRES	PWS_CITY
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	CLEARWATER
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	DUNEDIN
6522310	ACTIVE	BOULEVARD ESTATES	2266 GULF TO BAY BLVD.,LOT # 5	CLEARWATER
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	DUNEDIN
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	DUNEDIN
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	DUNEDIN

297

Clearwater Top- PWS- 2 miles

PWS_ZIP5	PWS_PHON	PWS_C	PWS	P	PWS_TYPE	P	PWS_SOURCE	PWS_POP_S	PWS_LAST_S	PWS_DESIGI
33765	7275624960	52	SWP	C	COMMUNITY			109350	10/16/2001	25000000
34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001	9590000
33765	7277990511	52	SWP	C	COMMUNITY			297	3/21/2000	50000
34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001	9590000
34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001	9590000
34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001	9590000

PWS_PRIMAR	PW:	WELL_ID	LOCATI(	WELL_NAME	FLUWID	WELL_STATU	LAT_DI	LAT_MI	LAT_SS
MUNICIPAL/CITY	DHI	23181	48473	CLEARWATER WELL # 56	AAH0616	ACTIVE	28	0	38.7465
MUNICIPAL/CITY	DHI	16061	47963	CITY OF DUNEDIN WELL #29	AAH0641	ACTIVE	28	0	14.6903
MOBILE HOME PARK	DHI	16194	48288	BOULEVARD ESTATES MHP WELL	AAD561(	ACTIVE	27	57	45.0974
MUNICIPAL/CITY	DHI	16063	47965	CITY OF DUNEDIN WELL #30	AAH064(	ACTIVE	28	0	12.4019
MUNICIPAL/CITY	DHI	16058	47960	CITY OF DUNEDIN WELL #5	AAH0631	ACTIVE	28	0	31.3441
MUNICIPAL/CITY	DHI	16060	47962	CITY OF DUNEDIN WELL #28	AAD5648	ACTIVE	28	0	29.5143

LONG_	LONG_	LONG_S	WELL_HEIGH	METI	DATUM	WELL_COORD	WELL_I	WELL_:	WELL_I	WELL_`	WELL_DEPTI	WELL_AVAI
82	44	30.5451	27.7750	DGP:	83	3/23/2001	3	5	6		199	PERMANEN
82	46	17.3066	15.8930	DGP:	27	4/25/2001	1	1	8	1984	300	PERMANEN
82	44	38.7756	24.0280	DGP:	83	3/7/2001	1	1	1	1958	170	PERMANEN
82	46	6.2624	20.2980	DGP:	27	4/25/2001	1	1	10	1984	302	PERMANEN
82	46	23.8545	19.6610	DGP:	27	4/25/2001	1	1	5	1956	225	PERMANEN
82	45	44.5032	24.5140	DGP:	27	4/25/2001	1	1	7	1984	300	PERMANEN

OBJECTID
882507
882936
883091
885529
888157
890787

PWS_ID	PWS_STATUS	PWS_NAME	PWS_ADDRES	PWS_CITY	PWS_ZIP5
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	DUNEDIN	34698
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	DUNEDIN	34698

Clearwater- PWS- 4 miles

PWS_PHON	PWS_C	PWS	P	PWS_TYPE	P	PWS_SOURCE	PWS_POP_S	PWS_LAST_S	PWS_DESIGI
7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001	9590000
7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001	9590000

PWS_PRIMAR	PW:	WELL_IE	LOCATIC	WELL_NAME	FLUWID	WELL_STATU	LAT_DE	LAT_MI
MUNICIPAL/CITY	DHI	16064	47966	CITY OF DUNEDIN WELL #11	AAH063(	ACTIVE	28	2
MUNICIPAL/CITY	DHI	16065	47967	CITY OF DUNEDIN WELL #12	AAH063;	ACTIVE	28	2

LAT_SS	LONG_	LONG_	LONG_S	WELL_HEIGH	METI	DATUM	WELL_COORD	WELL_I	WELL_:	WELL_I	WELL_'	WELL_DEPTI	WELL_AVAI
29.1973	82	45	18.8690	15.2070	DGP:	27	4/25/2001	1	1	11	1964	250	PERMANEN
29.2578	82	45	34.7595	28.8010	DGP:	27	4/25/2001	1	1	12	1964	105	PERMANEN

OBJECTID
885530
888158

PWS_ID	PWS_STATUS	PWS_NAME	PWS_ADDRES	
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	109350
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	37228
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	
6521673	ACTIVE	SOUTH GATE HOME OWNERS, INC.	20000 US 19 NORTH #809 275	
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	
6520242	ACTIVE	CAMP SOULE(BOY SCOUTS OF AMER)	2201 SOULE RD. 150	
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	
6524723	ACTIVE	DUNEDIN ASSEMBLY OF GOD	885 LAKE HAVEN RD	
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	
6520336	ACTIVE	CLEARWATER WATER SYSTEM	1650 N. ARCUTURAS AVE., BLDG. #C	
6520486	ACTIVE	DUNEDIN WATER SYSTEM	1401 COUNTY ROAD 1	

Clearwater Top- PWS- 3 miles

PWS_CITY	PWS_ZIP5	PWS_PHON	PWS_C	PWS	P	PWS_TYPE	P	PWS_SOURCE	PWS_POP_S	PWS_LAST_S
CLEARWATER	33765	7275624960	52	SWP	C	COMMUNITY			109350	10/16/2001
DUNEDIN	34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001
DUNEDIN	34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001
CLEARWATER	33764	7277267888	52	SWP	C	COMMUNITY			275	10/23/2001
DUNEDIN	34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001
CLEARWATER	33759	7273913800	52	SWP	N	NONCOMMUNITY			150	5/30/2000
CLEARWATER	33765	7275624960	52	SWP	C	COMMUNITY			109350	10/16/2001
CLEARWATER	33765	7275624960	52	SWP	C	COMMUNITY			109350	10/16/2001
DUNEDIN	34698	7277337205	52	SWP	N	NONCOMMUNITY			400	5/9/2001
DUNEDIN	34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001
DUNEDIN	34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001
CLEARWATER	33765	7275624960	52	SWP	C	COMMUNITY			109350	10/16/2001
DUNEDIN	34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001
DUNEDIN	34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001
CLEARWATER	33765	7275624960	52	SWP	C	COMMUNITY			109350	10/16/2001
DUNEDIN	34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001
DUNEDIN	34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001
DUNEDIN	34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001
CLEARWATER	33765	7275624960	52	SWP	C	COMMUNITY			109350	10/16/2001
DUNEDIN	34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001
CLEARWATER	33765	7275624960	52	SWP	C	COMMUNITY			109350	10/16/2001
CLEARWATER	33765	7275624960	52	SWP	C	COMMUNITY			109350	10/16/2001
DUNEDIN	34698	7272983100	52	SWP	C	COMMUNITY			37227	4/24/2001

PWS_DESIGI	PWS_PRIMAR	PW:	WELL_II	LOCATIC	WELL_NAME	FLUWID	WELL_STATU	LAT_DI	LAT_MI
25000000	MUNICIPAL/CITY	DHI	16052	48470	CLEARWATER WELL # 68	AAH0618	ACTIVE	28	0
9590000	MUNICIPAL/CITY	DHI	16054	47956	CITY OF DUNEDIN WELL #1	AAH0627	ACTIVE	28	0
9590000	MUNICIPAL/CITY	DHI	16066	47968	CITY OF DUNEDIN WELL #13	AAH0626	ACTIVE	28	1
46800	MOBILE HOME PARK	DHI	16145	48444	SOUTH GATE MHP WELL	AAH0643	ACTIVE	27	57
9590000	MUNICIPAL/CITY	DHI	22315	47973	CITY OF DUNEDIN WELL #87	AAH0639	ACTIVE	28	0
25000	CAMP GROUND		16044	48448	CAMP SOULE BSA WELL	AAD5662	ACTIVE	28	0
25000000	MUNICIPAL/CITY	DHI	16051	48469	CLEARWATER WELL # 63	AAH0617	ACTIVE	28	1
25000000	MUNICIPAL/CITY	DHI	23175	48465	CLEARWATER WELL # 46	AAH0615	ACTIVE	27	57
1470	CHURCH	DHI	16200	48497	DUNEDIN ASSEMBLY OF GOD WEI	AAD5659	ACTIVE	28	0
9590000	MUNICIPAL/CITY	DHI	16056	47958	CITY OF DUNEDIN WELL #3	AAH0629	ACTIVE	28	0
9590000	MUNICIPAL/CITY	DHI	16059	47961	CITY OF DUNEDIN WELL #6	AAH0632	ACTIVE	28	1
25000000	MUNICIPAL/CITY	DHI	23179	48468	CLEARWATER WELL # 53	AAH0621	ACTIVE	27	57
9590000	MUNICIPAL/CITY	DHI	22314	47972	CITY OF DUNEDIN WELL #83	AAH0638	ACTIVE	28	1
9590000	MUNICIPAL/CITY	DHI	16068	47969	CITY OF DUNEDIN WELL #15	AAH0624	ACTIVE	28	1
25000000	MUNICIPAL/CITY	DHI	16053	48471	CLEARWATER WELL # 69	AAH0619	ACTIVE	28	0
9590000	MUNICIPAL/CITY	DHI	16055	47957	CITY OF DUNEDIN WELL #2	AAH0628	ACTIVE	28	0
9590000	MUNICIPAL/CITY	DHI	16069	47970	CITY OF DUNEDIN WELL #16	AAH0634	ACTIVE	28	1
9590000	MUNICIPAL/CITY	DHI	16057	47959	CITY OF DUNEDIN WELL #4	AAH0630	ACTIVE	28	0
25000000	MUNICIPAL/CITY	DHI	16050	48455	CLEARWATER WELL # 58	AAH0613	ACTIVE	28	0
9590000	MUNICIPAL/CITY	DHI	16062	47964	CITY OF DUNEDIN WELL #9	AAH0633	ACTIVE	28	1
25000000	MUNICIPAL/CITY	DHI	23174	48706	CLEARWATER WELL # 45	AAH0614	ACTIVE	27	57
25000000	MUNICIPAL/CITY	DHI	23180	48472	CLEARWATER WELL # 77	AAH0620	ACTIVE	28	0
9590000	MUNICIPAL/CITY	DHI	22316	47974	CITY OF DUNEDIN WELL #89	AAH0635	ACTIVE	28	1

LAT_SS	LONG_	LONG_	LONG_S	WELL_HEIGH	METI	DATUM	WELL_COORD	WELL_I	WELL_:	WELL_I	WELL_'	WELL_DEPTI	WELL_AVAI
18.4825	82	42	57.9968	22.0180	DGP:	27	3/23/2001	3	5	3		182	PERMANEN
45.6054	82	47	20.3435	9.9000	DGP:	27	4/25/2001	1	1	1	1915	146	PERMANEN
25.6270	82	45	46.7570	18.6750	DGP:	27	4/25/2001	1	1	13	1970	340	PERMANEN
17.4432	82	43	56.9969	19.6170	DGP:	27	7/13/2001	1	1	1	1958	124	PERMANEN
56.3375	82	45	39.5920	12.9620	DGP:	83	4/25/2001	1	1	22	2000	185	PERMANEN
9.0087	82	43	10.8475	26.4690	DGP:	83	7/18/2001	1	1	1	1962	170	PERMANEN
1.1321	82	44	32.0756	26.7360	DGP:	27	3/23/2001	3	5	2		168	PERMANEN
51.4956	82	43	33.0324	17.3660	DGP:	83	3/23/2001	2	7	2		195	PERMANEN
56.8862	82	46	9.3005	11.3480	DGP:	27	7/18/2001	1	1	1	1983	160	PERMANEN
51.4479	82	47	2.5263	7.0490	DGP:	27	4/25/2001	1	1	3	1949	149	PERMANEN
11.6890	82	45	37.2636	38.6670	DGP:	27	4/25/2001	1	1	6	1957	175	PERMANEN
41.1496	82	44	0.0596	17.1910	DGP:	83	3/23/2001	2	7	5		170	PERMANEN
35.4471	82	45	18.7707	17.1270	DGP:	83	4/25/2001	1	1	21	1996	235	PERMANEN
28.0589	82	45	39.0169	22.7930	DGP:	27	4/25/2001	1	1	15	1970	220	PERMANEN
22.3140	82	43	6.8284	27.9240	DGP:	27	3/23/2001	3	5	4		305	PERMANEN
47.0004	82	47	8.7507	10.5700	DGP:	27	4/25/2001	1	1	2	1959	156	PERMANEN
28.0679	82	45	33.9739	18.2870	DGP:	27	4/25/2001	1	1	16	1970	175	PERMANEN
13.7416	82	47	15.5286	6.7920	DGP:	27	4/25/2001	1	1	4	1954	172	PERMANEN
38.7669	82	44	17.7986	26.1320	DGP:	27	3/23/2001	3	5	1	1973	276	PERMANEN
15.2108	82	45	42.5928	20.2800	DGP:	27	4/25/2001	1	1	9		332	PERMANEN
51.5230	82	43	45.8945	18.1440	DGP:	83	3/23/2001	2	7	1		198	PERMANEN
2.4864	82	43	34.8351	25.3550	DGP:	83	3/23/2001	3	5	5		260	PERMANEN
31.8470	82	44	52.6221	15.1650	DGP:	83	4/25/2001	1	1	23	2001	262	PERMANEN

OBJECTID
881593
881594
881595
881599
881752
883090
884210
884370
884738
885527
885528
885718
885719
886802
887777
888156
888159
888663
889447
889448
889626
890945
890946

27

McCarthy, Jim

From: Gonsalves, Michael

Sent: Wednesday, April 02, 2003 4:04 PM

To: McCarthy, Jim

Cc: Kutash, William

Subject: Superfund Referral List.xls

Jim,

Attached is a list of sites that I believe we need your help with. These sites have been with us for a while and we've really made no progress. We might have a site or two added in the future depending on what response we get from the PRP. Stay tuned. Some of these files have very little information due to the lack of response. Hope this is what you were looking for.

Michael A. Gonsalves, P.G.
Professional Geologist II
FDEP Southwest District
Waste Cleanup Section Supervisor
(813)-744-6100, ext. 376 (phone)
(813)-744-6125 (fax)
michael.gonsalves@dep.state.fl.us

Devoe & Reynolds	65905		1010-26 N. 19th St., Tampa	landfill/paint waste	Gonsalves
118th Avenue Drum site	88025		118th Ave., St. Petersburg	drum burial/solvent, petro compounds	Gonsalves
40th Street Landfill /Whitman Dump	241884		40th St., Largo	dump/metals	Eastman
Hancock's Carpet Service	75141		4103 & 4011 W. Cayuga St., Tampa	truck service facility/solvents	Cummings
Accurate Plating & Weaponry	91598	99-0198	1937 Calumet St., Clearwater	solvents	Herron
Broyles Property /McArthur Pest Control	104934	97-0778	110 Easton Dr., Lakeland	office/pesticides	Herron
River Ranch	194969		24700 Hwy 60 E, Lake Wales	golf course/arsenic	Herron
South Tamiami Trail /Walfreund	75354		6320 S Tamiami Trail, Sarasota	former dry cleaner	Barron
Clearwater Coal Gas Plant	66051		400 Myrtle St., Clearwater	former gas plant mfg/coal tar, cyanide, metals	Barron
Sugarbowl Landfill	200108		7200 Proctor Rd., Sarasota	landfill	Cummings
Universal Door / Northwest Expressway	261933		6822 + 6850 Benjamin Road	landfill	Gonsalves
The Laundry Room	236092		10650 U.S. HWY 301 S., Riverview	drycleaner	Cummings